TECHNOLOGY DEPT

Gas Journal

VOL. 275. 105TH YEAR. LONDON, JULY 1, 1953. NO. 4700. PRICE 1/3

PUBLIC LIBRARY
JUL 17 1953
DETROIT

Energy and the Engineer.

How do you measure your Energy? Whether it be in Horse Power, Kilowatts, Coulombs, Calories or Ergs, your vital interest is to ensure that as much of it as possible is transferred into useful work.

Unless you possess a Windmill or a Water Wheel, or enjoy the convenience of oil, your source of energy is Coal. Because it is our national heritage we in Bell's have come to look upon "the pound of coal" as a unit of energy, and thermal insulation our measure of efficiency. One of our contributions to the conservation of fuel is the effective insulation of radiant surfaces from the source of power to the ultimate point of work.

Specialists in Applied Asbestos, we are eager to advise on ways and means of husbanding Energy. Our VICEROY cellular asbestos sheets and sectional insulation can easily be fixed by unskilled labour and as easily dismounted for repairs. If necessary they can be specially and speedily shaped to meet individual needs. Insulating materials of all descriptions and experienced staffs of Laggers are instantly available at home and overseas. The accumulated knowledge and experience of the Bestobell Group of Companies is at your disposal. You have but to ring Bell's.

BESTOBELL

Bell's Asbestos and Engineering Limited
Bestobell Works Slough Bucks

(Telephone : Slough 25151)

The Bestobell Group includes W. N. Baines & Co. Limited, Ronald Trist & Co. Limited, Miller Insulation and Engineering Limited, Venetian Vogue Limited.

J R v.275 July-Sept. 1953

Do you handle things properly?

No, we do not suggest a course in psychology, but we do suggest that you may not be mechanically handling or conveying goods, when they may be so handled. Speed, safety and efficiency are vital in the production race, and it is necessary to have the help that the correct type of mechanical handling or conveying plant can give you. We design and manufacture such plant, specially to customers own individual requirements, so if you have a problem in this field—let us help you to solve it.

JOHN THOMPSON CONVEYOR COMPANY
ETTINGSHALL · WOLVERHAMPTON
A MEMBER OF THE JOHN THOMPSON GROUP
C. 16

DOUBLE-FACED GAS VALVES

"HICKS" TYPE WITH INTERNAL SCREW

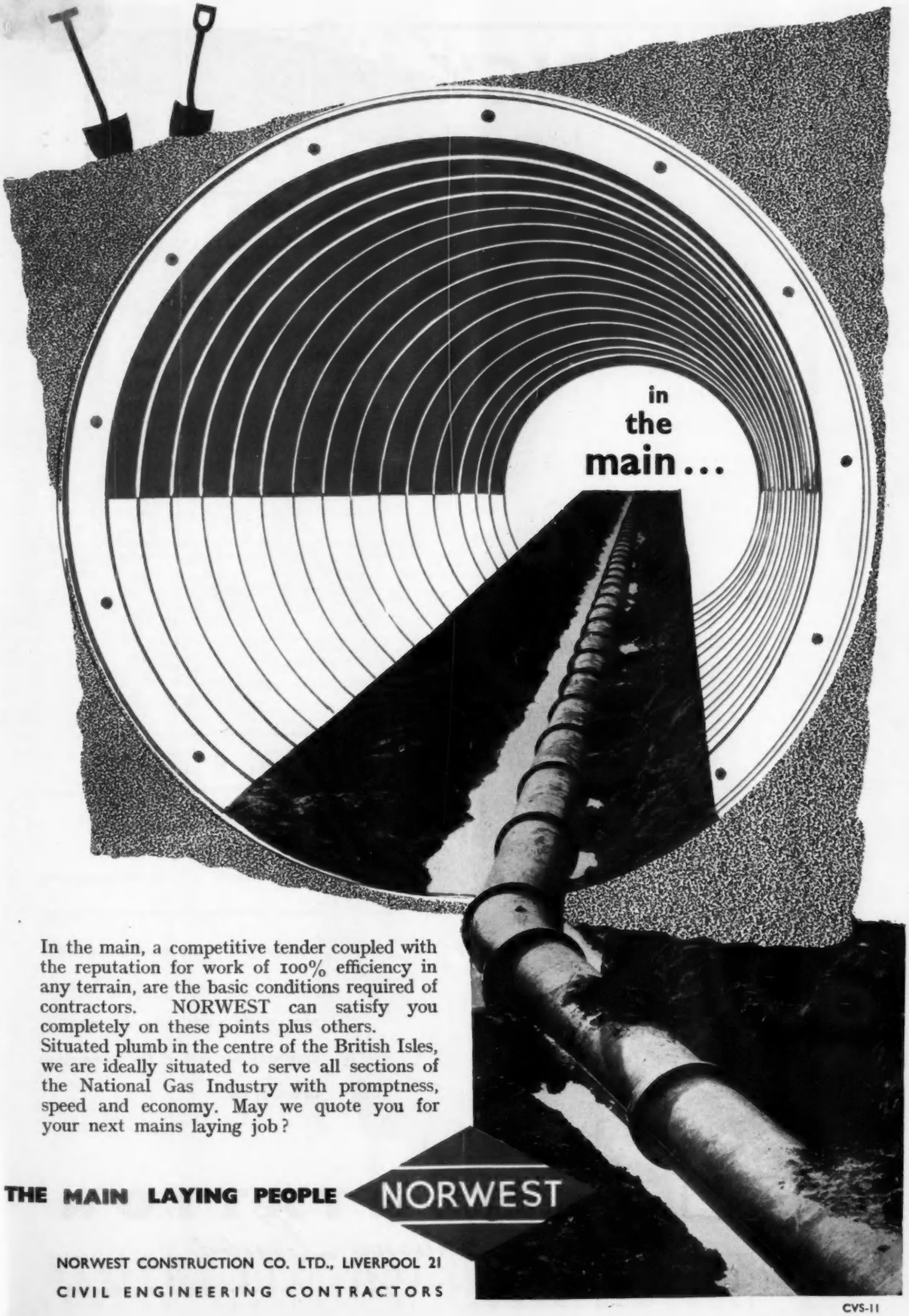
UP TO 24" - 10 lbs. per sq. in.
OVER 24" - 5 lbs. per sq. in.

THIS VALVE has the following special advantages:—

Access to all working parts for cleaning while valve is under pressure.
The valve is of the parallel slide type and cannot jam.
The faces are cleaned each time the valve is opened or closed.
The faces and spindles can be lubricated whilst in position, through points provided.
Made in sizes from 6-in. to 48-in.
Vertical or horizontal type.
These valves can also be supplied with external screw if required.

The BRYAN DONKIN CO LTD · Chesterfield
LONDON MANCHESTER MEMBERS OF THE SOCIETY OF BRITISH GAS INDUSTRIES

Tech'



In the main, a competitive tender coupled with the reputation for work of 100% efficiency in any terrain, are the basic conditions required of contractors. NORWEST can satisfy you completely on these points plus others.
Situated plumb in the centre of the British Isles, we are ideally situated to serve all sections of the National Gas Industry with promptness, speed and economy. May we quote you for your next mains laying job?

THE MAIN LAYING PEOPLE NORWEST

NORWEST CONSTRUCTION CO. LTD., LIVERPOOL 21
CIVIL ENGINEERING CONTRACTORS

CVS-11

A

R. & J. DICK LTD.

POWER TRANSMISSION SPECIALISTS

GREENHEAD WORKS
GLASGOW, S.E.
and at
LONDON · BRISTOL · BIRMINGHAM
MANCHESTER · DUNDEE · LEEDS
NEWCASTLE · BELFAST · DUBLIN
U.S.A. WORKS - - PASSAIC

Manufacturers of :-

"DICK'S ORIGINAL" BALATA Belts
For all general purpose drives

"DIXEL" VEE ROPES
Made endless or open for drives up to 3 000 H.P.

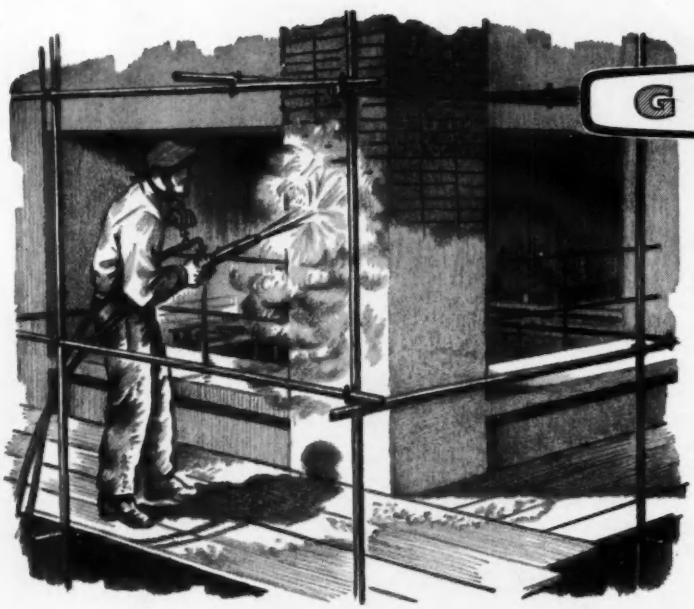
"DIXIT" Belting
Acid and Heat Resistant

"RUBERIX" BELTING
Solid Woven from "Filastic" yarn Vulcanised

"DIXADD" BELTING
Combination Belt giving extra power

"DICKROPE"
RUBBER, MOULDED, ENDLESS

Catalogues and Price Lists on application



GUNITE

The successful way to recondition defective concrete structures, encase structural steelwork, and line tunnels and water reservoirs. Developed and applied in all parts of the world with the resources, experience and skill of The Cementation Company, Ltd.

BY THE CEMENTATION Company Limited

BENTLEY WORKS · DONCASTER · Tel. DON. 54177-8-9

GRACE, ELEGANCE & TRADITION

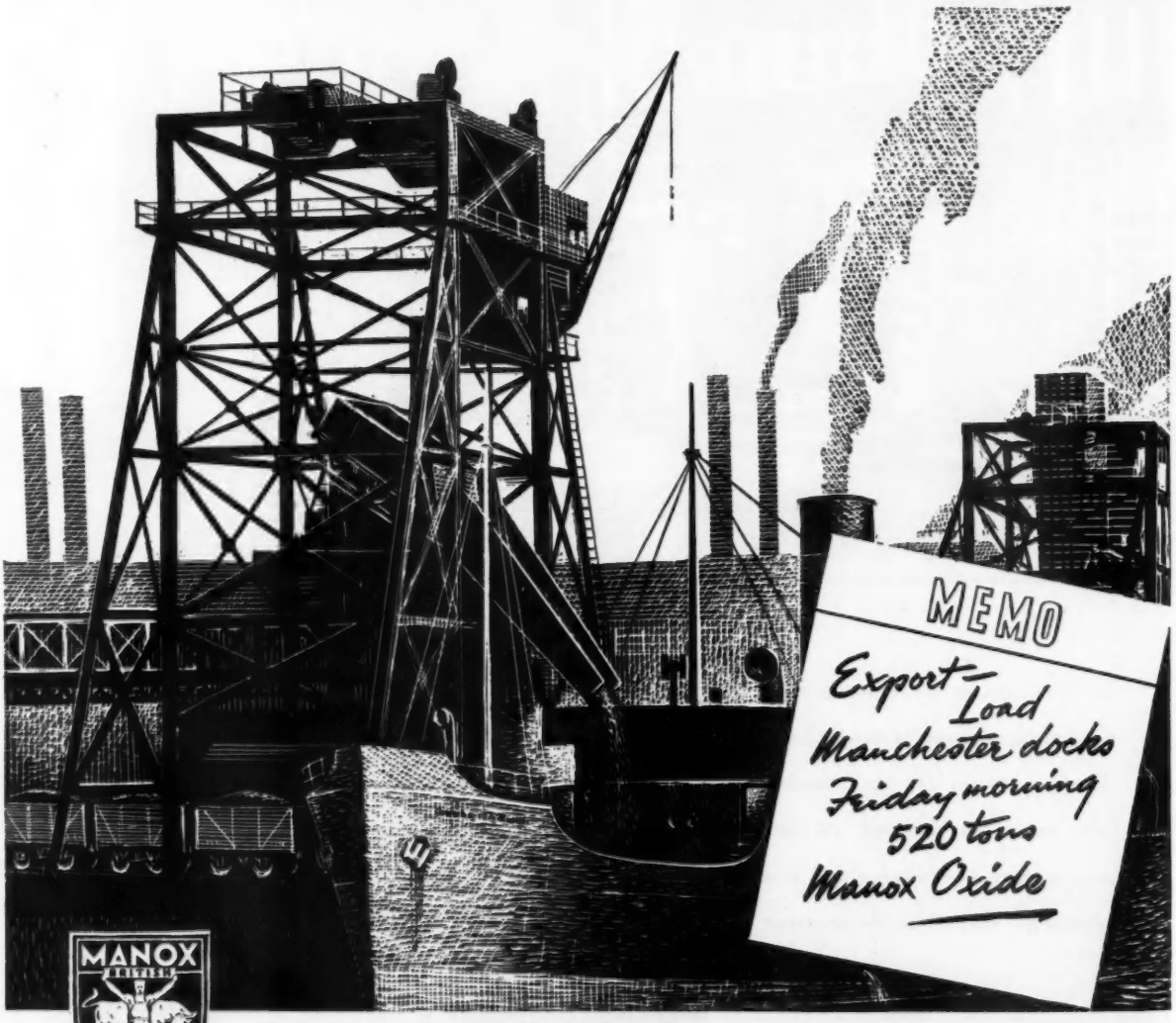
Crowherst Place, Surrey.

STOVES LTD. RAINHILL, LIVERPOOL.

LONDON OFFICE · 91 FARRINGDON ROAD E.C.I.

SERVICE

FOR THE GAS INDUSTRY



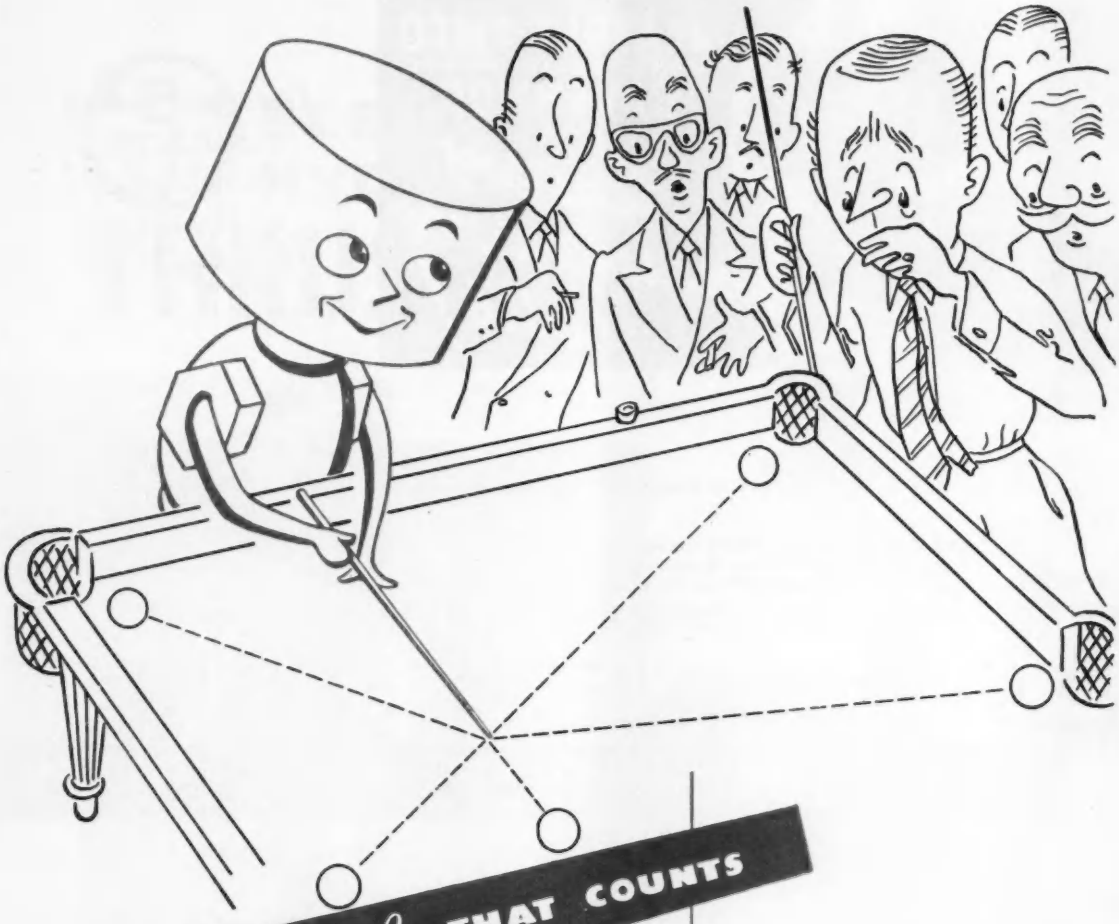
HARDMAN & HOLDEN LIMITED

INCORPORATING MANCHESTER OXIDE CO LTD

MANOX HOUSE · MILES PLATTING · MANCHESTER · 10

TELEPHONES: COLLYHURST 1551 (11 LINES) • TELEGRAMS: OXIDE MANCHESTER

P 12



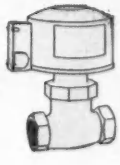
IT'S *control* THAT COUNTS

The skill of the expert, with lots of experience behind it . . . that is what produces the control you find in Magnetic Valves. Really close and dependable control, what's more—whether automatic or remote, whether of water, steam, coal gas, oil, air or other industrial liquids and gases, and all without glands, stuffing-boxes or driving-shafts. Let us send you our catalogue, showing the full range of Magnetic Valves up to 12" orifice.

SPECIAL VALVES DESIGNED if required.
STANDARD VALVES DELIVERED ex stock.

MAGNETIC "P" TYPE HIGH PRESSURE STOP VALVE

This valve is of the shut-off pattern and is suitable for passing water, air, saturated steam, oil, gas, etc., at pressures from 10 to 250 lbs. per sq. in. and higher if required.

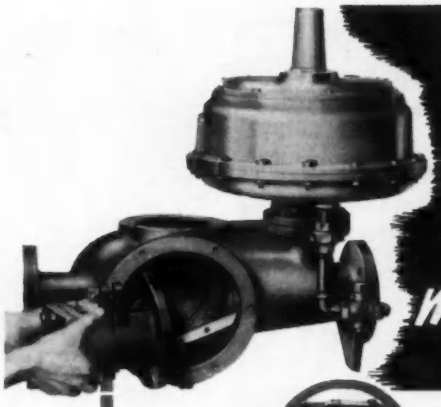


A flame proof solenoid housing, Buxton Certified, can be fitted where required.

THE **magnetic valve co.** LIMITED

28, ST. JAMES'S PLACE, LONDON, S.W.1.
TELEPHONE : REGent 7588

(Manufacturers of Automatic Valves for over 20 years)



JEAVONS-EMCO
BALANCED VALVE HIGH PRESSURE
GOVERNOR..
..lowers maintenance costs!

Time and money saved in the Reconditioning or Replacing of Valve Bowls

★ See how the COMPLETE Valve Bowl Assembly can be removed to facilitate reconditioning or interchanging with a spare unit without disconnecting from the line.

Normally to suit inlet pressures up to 30-lbs. sq. in. (or higher if desired); outlet pressure inches W.G. (or lbs. per sq. in.).

Send for Brochure 47/8/BV or Complete Catalogue if desired.

● *Steel kiosks also supplied*

JEAVONS ENGINEERING CO · TIPTON · STAFFS

'PHONE: TIPTON 2161 (5 Lines). PROPS: E. E. JEAVONS & CO. LTD. 'GRAMS: PIPELINES · TIPTON

for HIGH PRESSURE, COLUMN G[illegible]RAL GUIDED

GASHOLDERS

RIVETTED OR WELDED

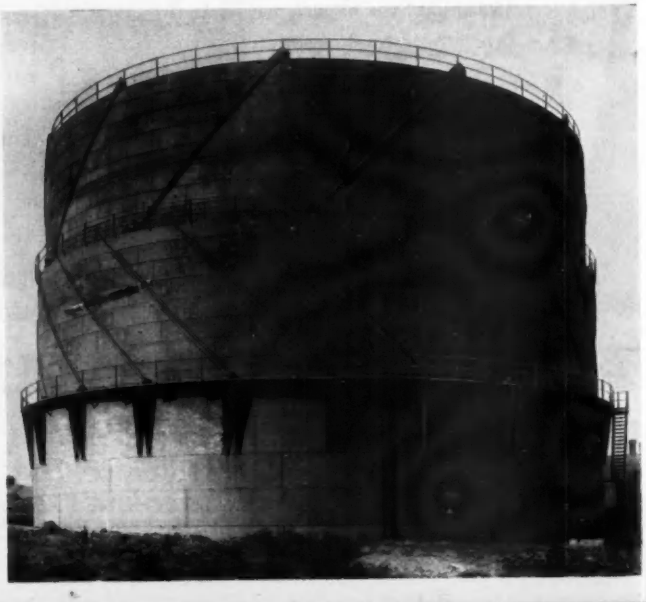
BLAKELEYS

Consult

FIRTH BLAKELEY SONS & CO LTD

CHURCH FENTON, YORKS

Telephone: BARKSTON ASH 234/5



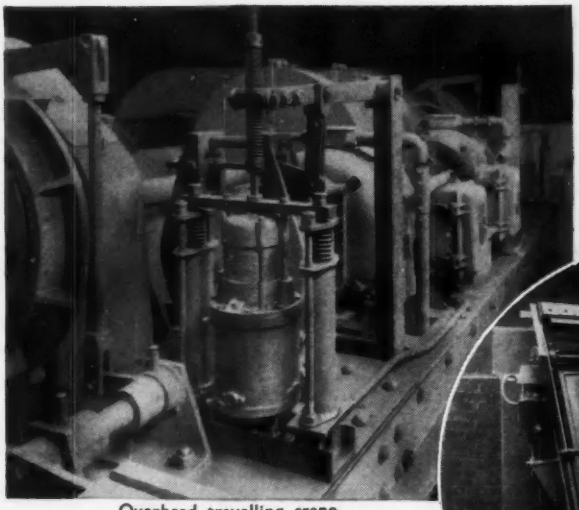
B T-H

ELECTRO-HYDRAULIC THRUSTOR

Exerts a smooth straight-line constant-pressure thrust throughout full stroke, without shock or jar

FROM 40 lb. Thrust up to 2 in. Stroke

TO 800 lb. Thrust up to 12 in. Stroke



Overhead travelling crane fitted with Thrustor-released brakes, giving stable creeping speed control.

Airlock Door in a Midland Colliery operated by two photo-electrically controlled flameproof thrustors.

Available in two enclosures—Industrial and Flameproof, the latter being covered by F.L.P. Certificates for use in Coal Mines, Gas Works, Oil Refineries, Paint and Varnish Factories, or any situation where inflammable gas or vapour may be present.

Applications include Brakes, Clutches, Conveyors, Doors, Presses, Valves—in fact, wherever a limited mechanical movement is required, a Thrustor can be used.

THE
BRITISH THOMSON-HOUSTON
COMPANY LIMITED RUGBY ENGLAND

Member of the AEI group of companies

A3858

ETHER
Solenoid Valves •

Safety Shut-off. Type H.A.C.

ETHER Safety Shut-off Valves are manually opened and held open electrically. They close on current failure and remain so until manually opened.

They are used in conjunction with oil and gas burners to automatically cut off fuel and/or air supply in the event of faulty or dangerous operation.

Ether safety shut-off valves have many features ensuring trouble-free and lasting operation.

They are packless, explosion proof, noiseless and are liberally rated with low temperature rise. All valves give a 100 per cent. total shut-off of fuel. They are suitable for controlling most liquids and gases at low and high pressures.

BRITISH INSTRUMENT INDUSTRIES EXHIBITION
OLYMPIA·LONDON
JUN.30-JUL.11'53
STAND Nº 147

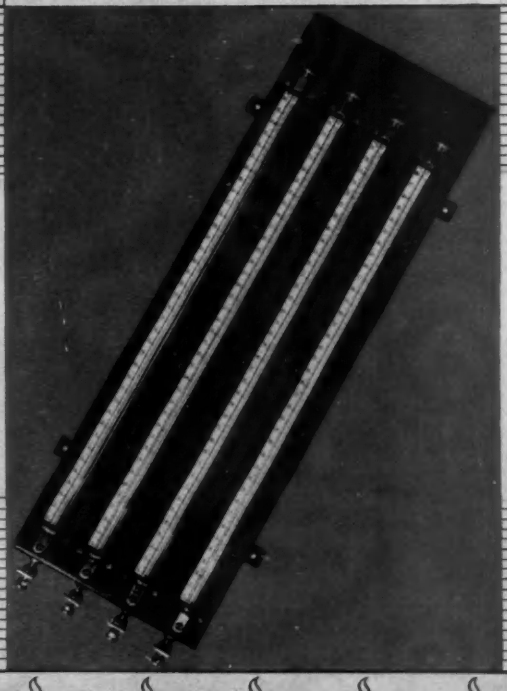
● Ether shut-off valves, used in conjunction with Air Flow Switches and other accessories, provide the answer to most combustion safeguard problems.

Send for List No. 251

ETHER LIMITED
TYBURN RD. · ERDINGTON · BIRMINGHAM · 24
TELEPHONE: EAST 0276-7

MOUNTED ON EBONY SINDANYO BOARD

SINGLE TUBE PRESSURE GAUGES

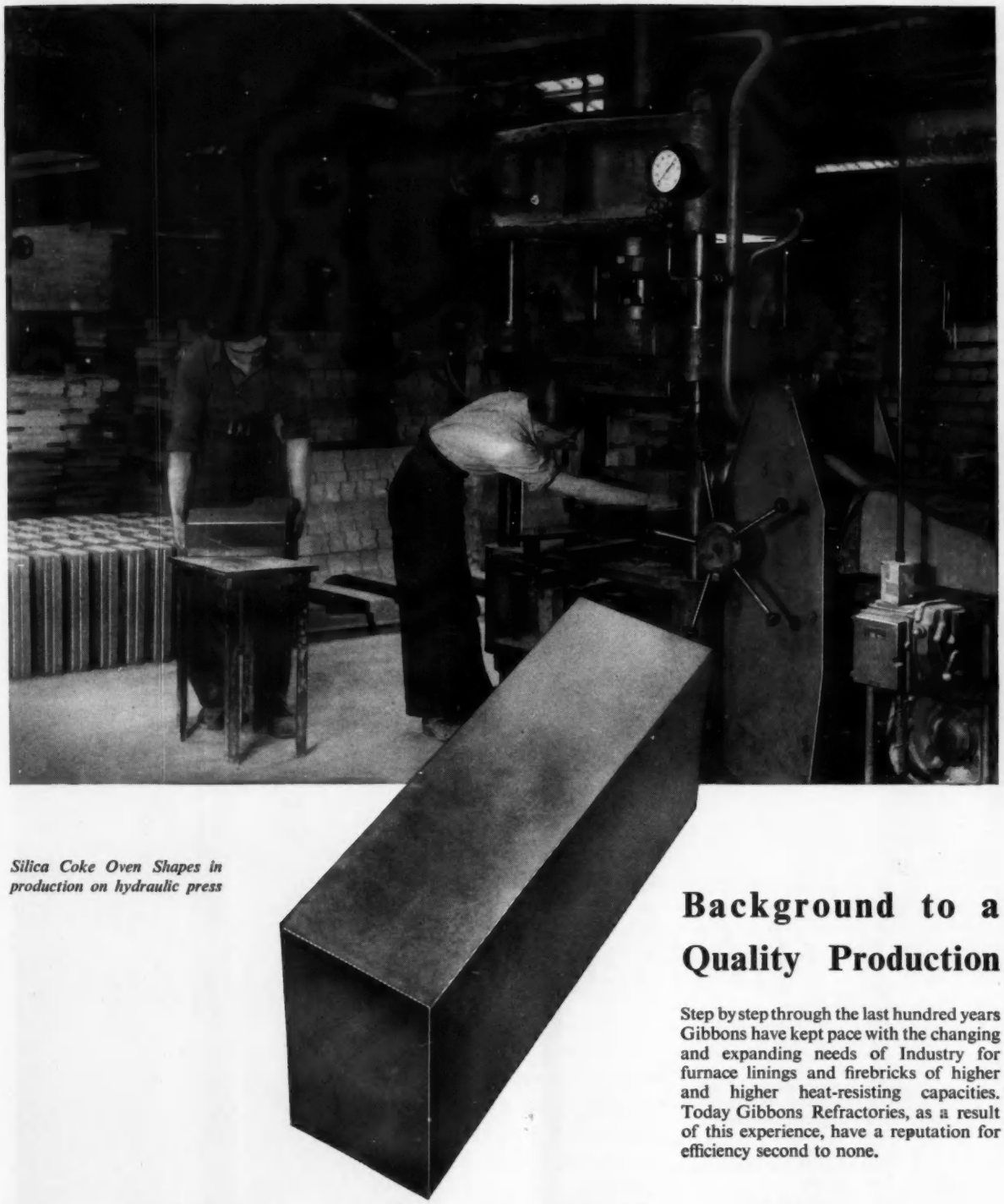


INSTRUMENTS OF PRECISION

MOUNTED ON EBONY SINDANYO

MILNE'S METERS LTD
MILTON HOUSE WORKS
EDINBURGH

LEEDS BRANCH
MIDLAND METER WORKS VICTORIA ROAD



Silica Coke Oven Shapes in production on hydraulic press

Background to a Quality Production

Step by step through the last hundred years Gibbons have kept pace with the changing and expanding needs of Industry for furnace linings and firebricks of higher and higher heat-resisting capacities. Today Gibbons Refractories, as a result of this experience, have a reputation for efficiency second to none.

H.T.1. · ALUMINOUS · SILICA · FIREBRICK · SILLIMANITE

GIBBONS superior refractories

Gibbons (Dudley) Ltd., Dibdale Works, Dudley, Worcs.

RECENT CLAPHAM INSTALLATIONS AT BRADFORD

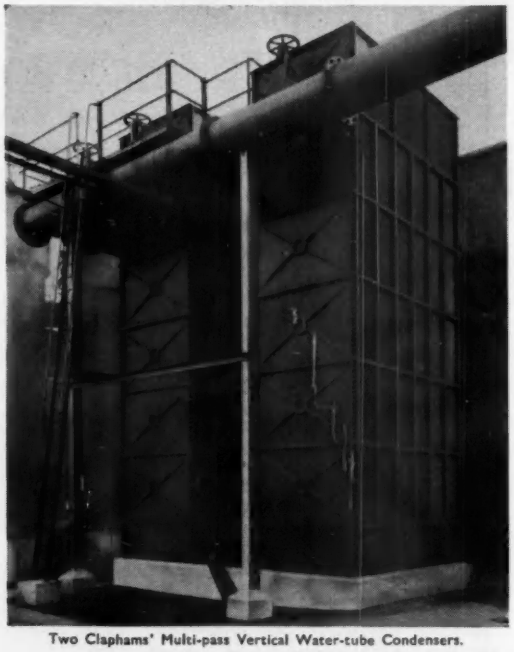
For over 100 years we have been serving the Gas Industry and the illustrations show equipment recently installed for the North Eastern Gas Board at Birkshall Works, Bradford.

Manufacturers of

- Condensing Plant
- Tar Extractors
- Washers (Pumpless Patent)
- Oxide Purification Plant
- Boxless Purifiers (Prov. Pat.)
- Liquid Purification Plant
- Mechanical Handling Plant
- Coke and Pan Ash Washers
- Purifier Control Valves
- Gas Pre-Heaters
- Briquetting Plants
- Refractory Brick Making Plant
- Special Pipes and Connections in cast iron and steel

Two Clapham-Barwick Pumpless Static Ammonia Washers.

Internal deck Level view of the Purifier Installation. (Eight 45 Feet Square Boxes.)



Two Claphams' Multi-pass Vertical Water-tube Condensers.

CLAPHAM BROS. LIMITED
MAKERS OF GAS WORKS EQUIPMENT SINCE 1837
KEIGHLEY · YORKS Tel: 2787-2788-Grams: 'Clapham Bros. Keighley'

they LOVE this 'BABY'!

CAREER GIRLS, BACHELORS, NEWLYWEDS—they all love the Junior General Gas Cooker, because however small their living-space it puts real meals within their reach. Hardly bigger than a radio set, there's practically nothing it can't do : it boils, roasts, grills and bakes in its versatile quick-heating oven. No more queues of pots and pans waiting for the gas ring; instead, a *real* breakfast in a hurry—after work, friends to supper and a hearty meal to give them.

General Gas Appliances Ltd. created the Junior General Cooker in response to the growing post-war demand of families who lack space for a full-size cooker. It gives a *complete* answer to their cooking problems.

JUNIOR GENERAL GAS COOKER

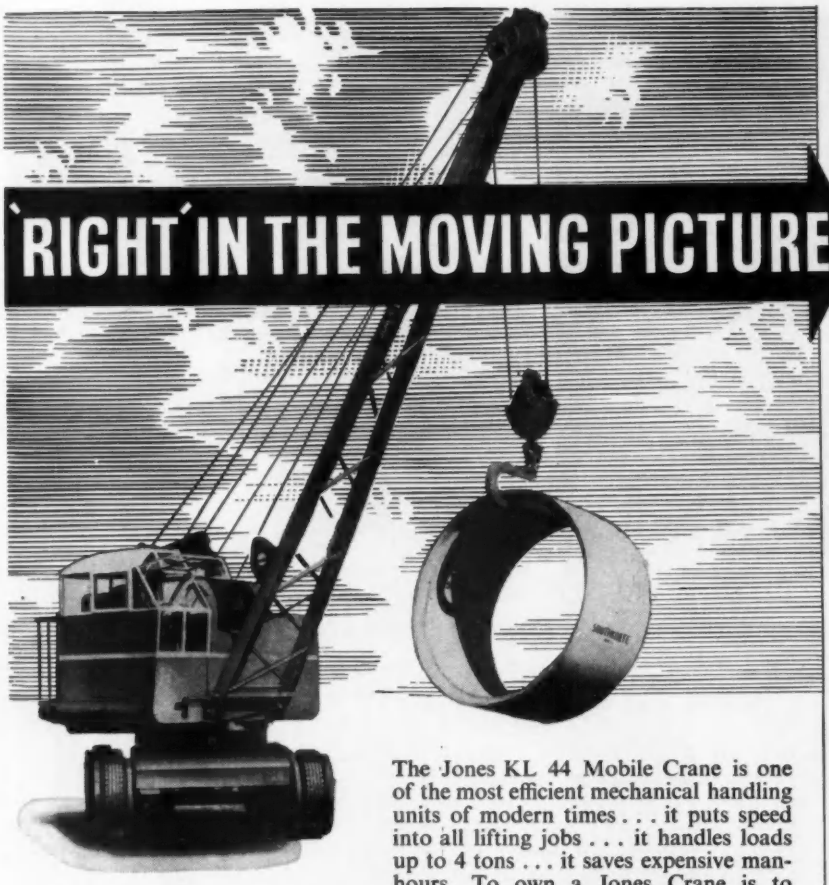
Made by

GENERAL GAS APPLIANCES LTD., CORPORATION ROAD, AUDENSHAW, MANCHESTER

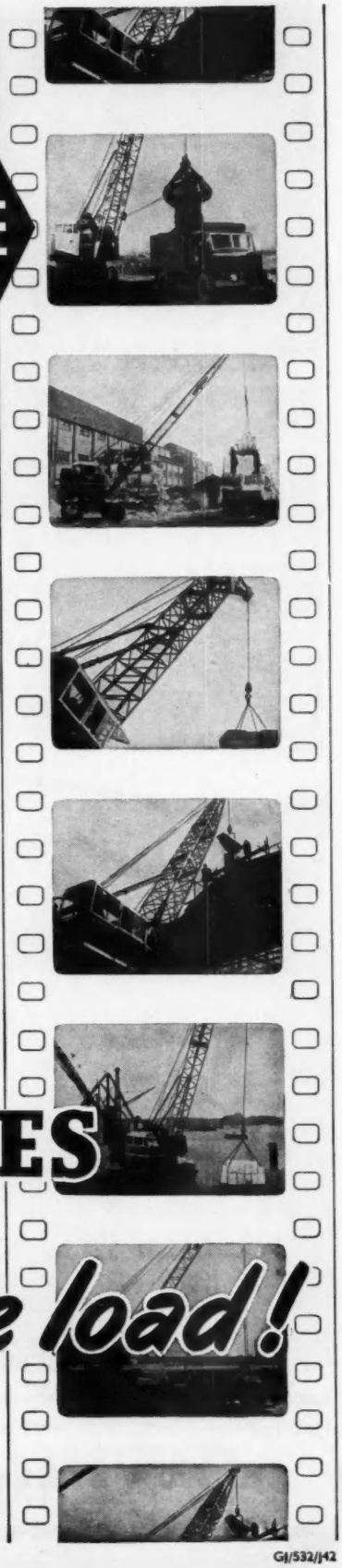
(Proprietors: Allied Ironfounders Ltd.)

FIGURES WORTH NOTING . . .

"One-man" and "one-woman" families now number nearly one-and-a-half million.



'RIGHT' IN THE MOVING PICTURE



The Jones KL 44 Mobile Crane is one of the most efficient mechanical handling units of modern times . . . it puts speed into all lifting jobs . . . it handles loads up to 4 tons . . . it saves expensive man-hours. To own a Jones Crane is to possess a top-performance time and money-saver, ready to go into action instantly and in a hundred different ways. Jones KL Mobile Cranes can go anywhere . . . they are easy to operate . . . are designed for the safety and comfort of drivers . . . they can be supplied with a wide variety of jibs, grabs and other special equipment. And they are backed by the unique Jones KL guarantee and '4-point' service. Let us know your handling problems *now*—it is almost certain that a Jones Crane can solve them.

JONES KL CRANES take the load!

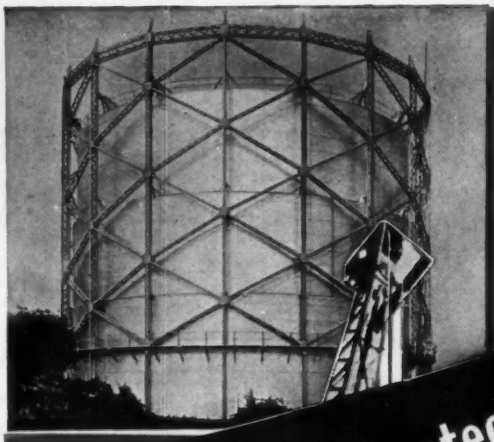
The range includes: **KL 15**—*for loads up to 15 cwt.;* **KL22**—*for loads up to 2 tons;* **KL 44**—*for loads up to 4 tons;* **KL 66**—*for loads up to 6 tons;* **KL 100 Rail Crane**—*for loads up to 5 tons.*

Write for full details.

THE 600 GROUP

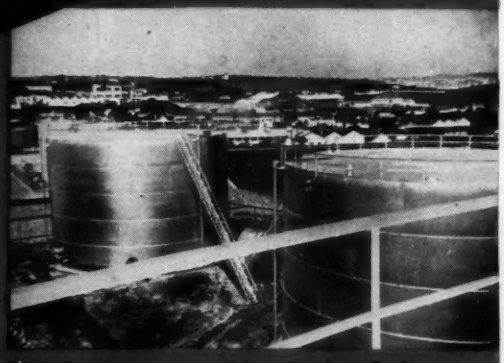
Distributed in the United Kingdom by: **GEORGE COHEN SONS & COMPANY LTD** WOOD LANE · LONDON · W.12 Designed, Manufactured and Exported by their Associates: **K & L STEELFOUNDERS & ENGINEERS LTD** · LETCHWORTH · HERTS

GJ/532/142



Gasholder in Kent showing brilliance of Atlas Ruskilla Aluminium Paint.

For the protection of metal structures



Spirit Containers, property of Sacor Petroleum Co. in Portugal, coated with "Atlas Ruskilla" Aluminium Paint. High reflectivity of this paint reduces effects of solar heat and consequent loss of spirit by evaporation.

ATLAS RUSKILLA Iron and Steel Preservative Paints have been specifically designed for the enduring protection of all types of structural work. They embody over half-a-century of specialised experience in the manufacture of anti-corrosive paints, and their stamina has been proved in every part of the world. Let us send you Shade Card and prices.

For economy's sake, order or specify . . .

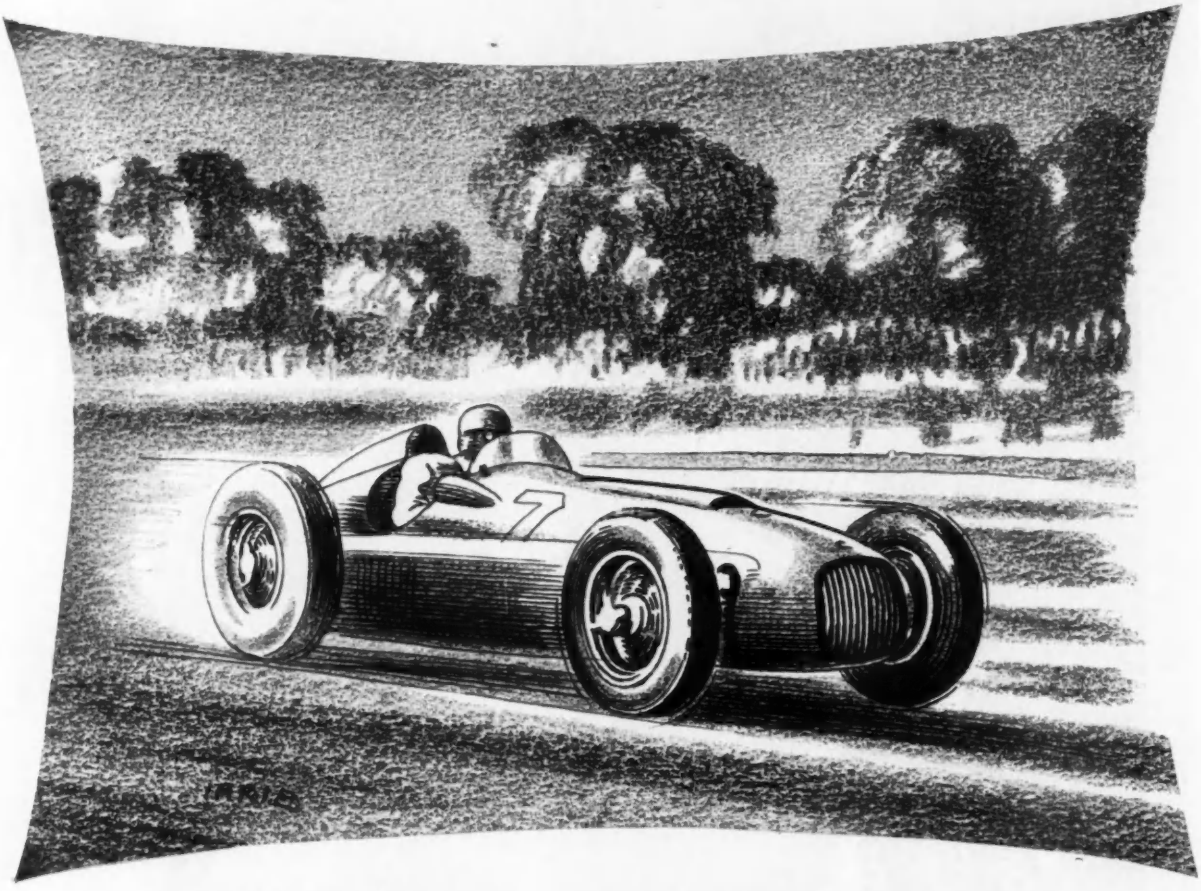
ATLAS RUSKILLA

IRON & STEEL PRESERVATIVE PAINTS

The Paints of Stamina!

ATLAS PRESERVATIVE CO. LTD., ERITH, Kent. 'Phone: ERITH 2255 (3 lines) 'Grams: Rooxydizer, Erith.

TAS/AS 75



UNDER CONTROL

Watch any of the top flight drivers, and see a perfect example of precision, sheer *nicety*, of control. So it is with Peebles Governors—in their own sphere they can be depended upon for the same precise, and *constant* control, quickly responsive, meticulously accurate. Peebles are *best* for Governors.

Peebles

FOR GOVERNORS

PEEBLES & CO. LTD., TAY WORKS, WEST BOWLING GREEN ST., EDINBURGH 6
Telephones: 36544 & 33069 Telegrams: "TANGENT, EDINBURGH"

ASK THE OILMEN!

'With thousands of these to maintain, we appreciate Crane quality'

... the maintenance engineer would tell you

The maintenance engineer is the man who knows how equipment stands up on the job—that's why Crane has so many friends among maintenance men. Whether it be one of the hundreds of 16″ giants, supplied to the immense new oil refineries, including power-plants, built since the war, or an $\frac{1}{8}$″ midget for close control of pressures, Crane valves are made for service. Crane care in the selection of materials, in testing and inspection makes the difference! **If you need valves, of any size or type, ask Crane first.**

CRANE **VALVES OF GUN METAL, CAST IRON AND CAST STEEL**

A1

CRANE LTD., 45-51 LEMAN STREET, LONDON, E.1. Works: IPSWICH. *Branches: Birmingham, Brentford, Bristol, Glasgow, Manchester*

LEATHERS

FOR THE GAS INDUSTRY

DIAPHRAGM & GENERAL LEATHER CO. LTD.

FRANKLIN ROAD WORKS · PORTSLADE · SUSSEX

Telephone: HOVE 47266/7 Telegrams: DIAPHRAGM, PORTSLADE

TAKE A TIP!

"I ain't got an 'oss" says Alf Leadbeater, the Plumber's Pal, "But I got something here you can put your shirt on! A two to one shot it is. *Two* minutes time and *one* special tool, guaranteed to fix slow plumbers and make 'em forget their handicaps. Securex is the name. A lively 30-year-old joint it is, by Lamont out of Edinburgh and it can't fail to win by a length of piping. It'll be a certain saver on time, trouble and temper, and guaranteed to put you in the money!"

JAMES H. LAMONT & CO. LTD.

ENGINEERS — BRASSFOUNDERS

SECUREX SOLDERLESS COMPRESSION JOINTS

Gylemuir Works, Corstorphine, Edinburgh 12, Scotland

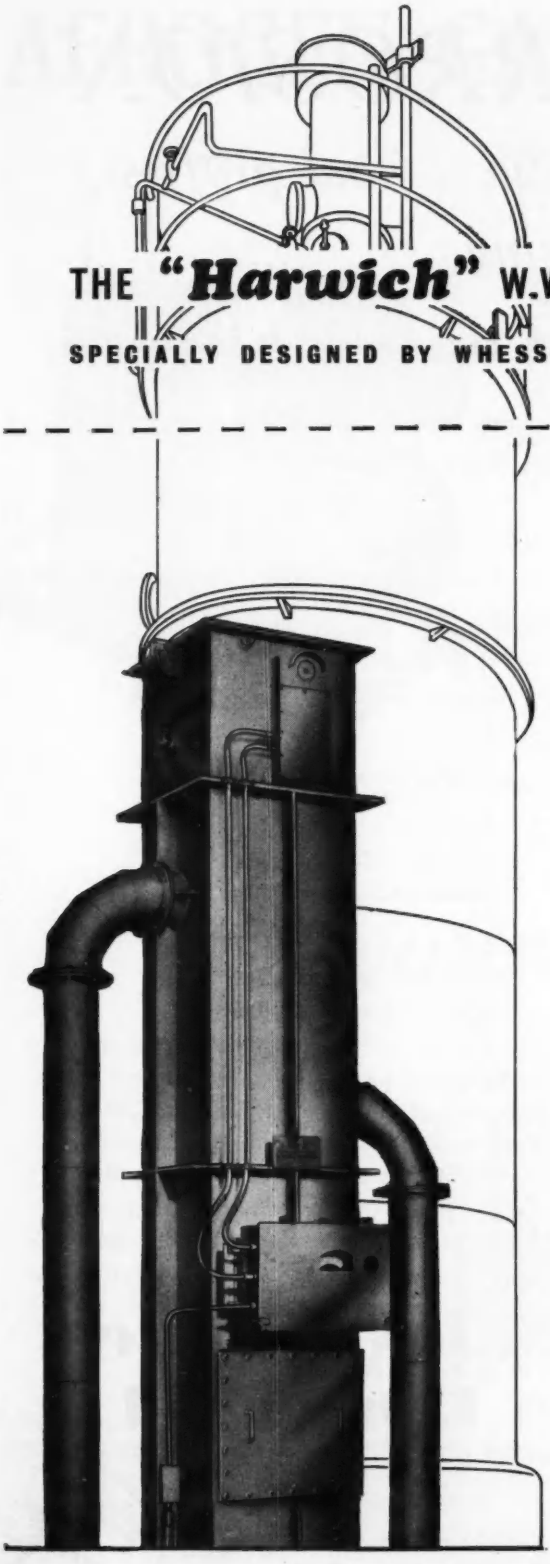
Telephone: Corstorphine 66641-2 Telegrams: "Solderless, Edinburgh"

London Office: Norfolk House, Laurence Pountney Hill, E.C.4

Telephone: Mansion House 5700 Telegrams: "Yutaka Cannon, London"

THE "Harwich" W.W-D. ELECTRO-DETARRER

SPECIALLY DESIGNED BY WHESSOE FOR THE SMALLER WORKS



A new version of the W.W-D. Electro-Detarrer is now available in capacities up to 0.75 Million cu. ft. per day

Features of the **"Harwich"** W.W-D. Electro-Detarrer:

- Low capital cost
- Power consumption less than 0.75 kW including insulator heating
- High efficiency tar fog extraction with negligible back pressure
- Integral construction: gas treater and weather-proof electrical equipment built as one unit
- Toughened glass insulator
- No cost for rectifier house, high tension cable or steam supply

Patent applied for.

"Harwich" W.W-D. Electro-Detarrer in operation at the Harwich Works of the Eastern Gas Board.

WHESSOE LIMITED DARLINGTON • ENGLAND
LONDON OFFICE: 25, VICTORIA STREET, S.W.1

STAND 141 GROUND FLOOR GRAND HALL ENGINEERING, MARINE & WELDING EXHIBITION, OLYMPIA SEPTEMBER 3-17.

R.P.W. 26

B

DETROIT PUBLIC LIBRARY

STOP CORROSION

from eating into products (and profits!)

by using

Cold Reduced Coated Sheets

WHERE protective coatings are required to resist the vicious attacks of corrosive agents, Staffordshire Heavily Coated Sheets will meet your need.

The cold reduced steel base has excellent forming properties under the press, and the heavy coating of Tin, Tin-Terne or Lead give a first-class bonding surface for paint and low temperature enamels.

Cold Reduced Staffordshire Heavily Coated Sheets are widely used by the Motor, Gas, Fire Fighting Equipment, Ventilation and Dairy Industries — in fact wherever specially resistant coatings are required.

These sheets are available in all sheet sizes and gauges in the following qualities :—

Staffordshire Heavily Coated Tinned Sheets

Staffordshire Heavily Coated Genuine "Tin-Terne" Ternecoated Sheets (20% Tin)

Staffordshire Heavily Coated Ternecoated Sheets (7% Tin)

Staffordshire Heavily Coated Leadcoated Sheets (2% Tin)

Enquiries should be addressed to:—

RTSC

RTSC Home Sales Limited

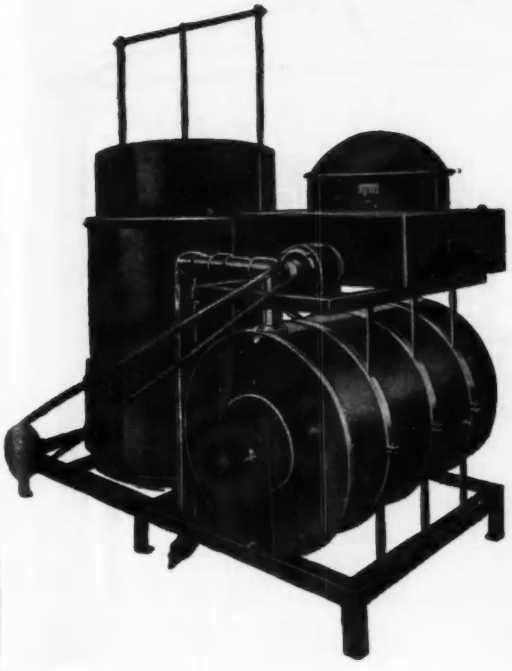
47 Park Street London W1

Telegraphic Address: "Homerold" Audley London *Telephone: Mayfair 8432*

RTB

The Home Sales Organisation for the Mild Steel Flat Rolled Products
of RICHARD THOMAS & BALDWINS LIMITED
and THE STEEL COMPANY OF WALES LIMITED

AEROGEN GAS GENERATORS



PETROL AIR: 300 B.T.U. per cubic foot
PRODUCER AND PETROL COMBINED:
480 B.T.U. per cubic foot

Suitable for Domestic Commercial and Industrial Appliances at Home or Abroad where Town's Gas is not readily available.

Outputs of Plants Range from 100 Cubic Feet to 15,000 Cubic Feet per hour

Full technical information can be obtained from:

THE AEROGEN CO. LTD.,
ALTON, HAMPSHIRE, ENGLAND

Telegrams: Aerogen, Alton, Hants. *Telephone: Alton 2081*

It's *your* business

WHATEVER your business, whatever your product, you are up to your neck in the *handling* business. Lift, shift, lift, shift, it's happening all the time, all the way from GOODS IN to GOODS OUT. Every move costs you money. So it's very much your business to save by keeping output flowing and overheads down with modern handling gear.

It's surprising how much you can save through modern investment in a well-planned layout of KING conveyors, cranes and pulley blocks. Sometimes a single year's savings repay your outlay.

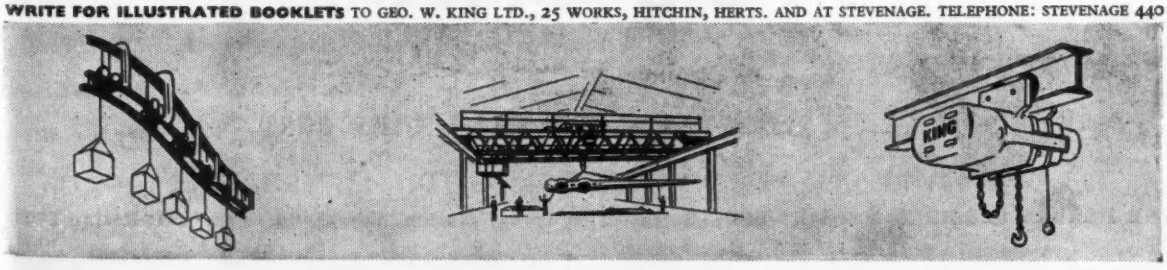
The first move is a talk with a planning engineer from Geo. W. King Ltd. Find out just how we can help you. It costs you nothing. There is no obligation except ours—to help you produce more for less money.

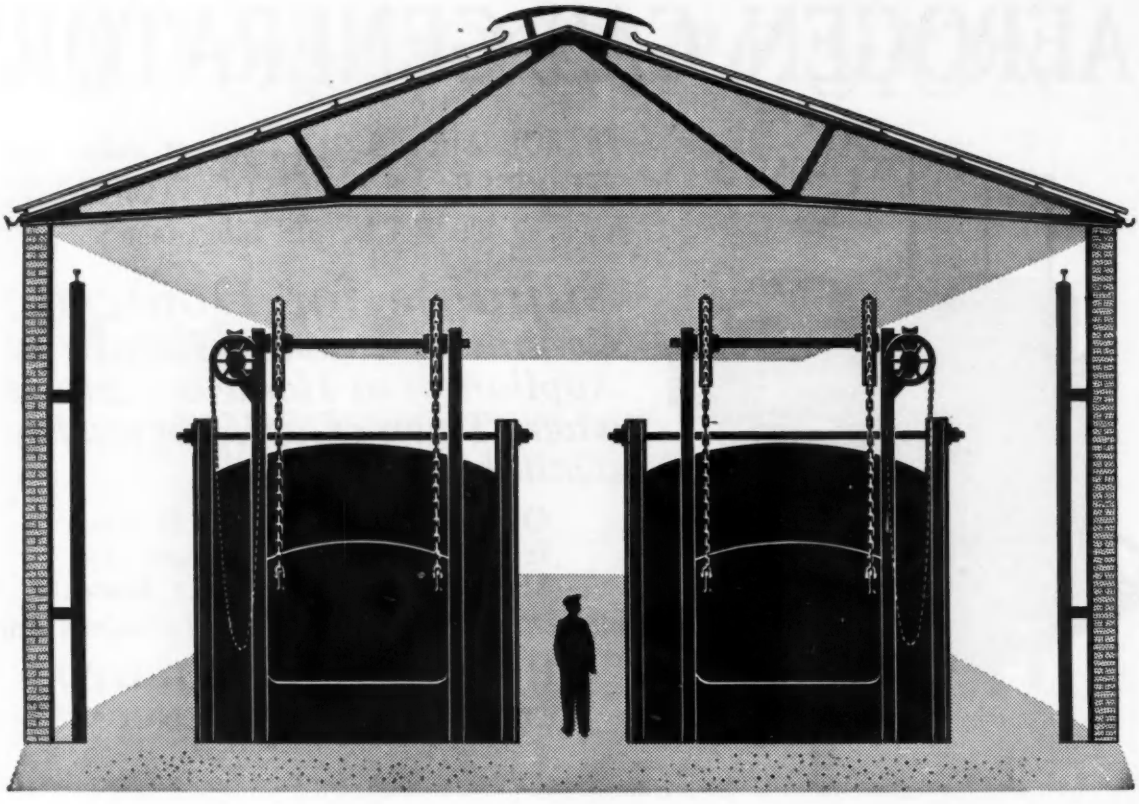
KING
REGISTERED TRADE MARK

CONVEYORS · CRANES · PULLEY BLOCKS

OUR REPRESENTATIVE WILL CALL ON YOU ANYWHERE IN THE WORLD.

WRITE FOR ILLUSTRATED BOOKLETS TO GEO. W. KING LTD., 25 WORKS, HITCHIN, HERTS. AND AT STEVENAGE. TELEPHONE: STEVENAGE 440





How many furnaces can you count — two or three?

"*You needed three to keep pace with the new production line. . . . Where's the third?*"

"In the other two. We've increased their capacity by fifty per cent. We get six charges per shift instead of four."

"*They look about the same.*"

"As a matter of fact, externally, they are exactly the same. A bit larger inside—thinner walls. But that's not the point; we've cut down the heat the walls soak up on every charge, it's that which has made the difference. They're built of a light-weight brick with a very low thermal capacity—and it's a good insulator into the bargain. We use no more fuel for six charges than we used for four."

"*The old hot face insulation, eh? Shouldn't have thought it would stand the temperature.*"

"The old stuff wouldn't. This is something new: stands 1540°C or 2800°F if you prefer it that way hence its name M.I.28. M. for Morgans of course."

MORGAN Refractories

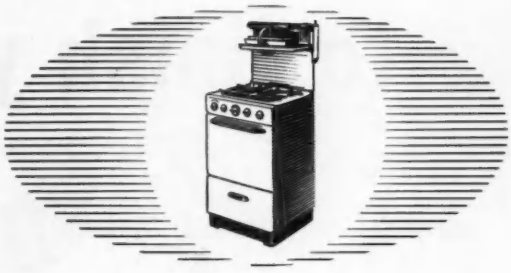
ARE WORTH FAR MORE THAN THEY COST

THE MORGAN CRUCIBLE COMPANY LTD. (Refractories Group), Neston, Wirral, Cheshire. Tel: Neston 1406

N.S.26

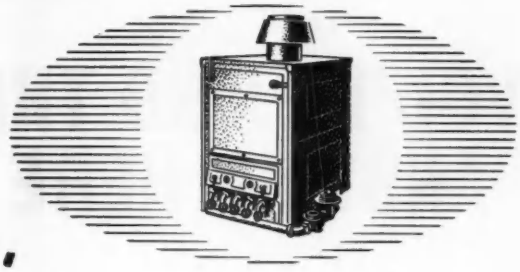
When a **Teddington** instrument

. is in control...



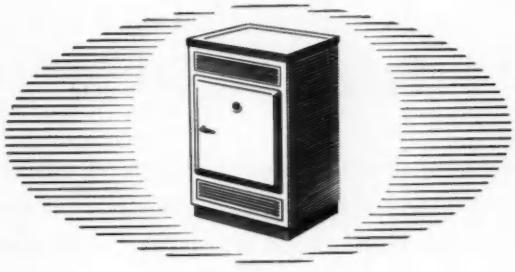
. cookers cook...

. heaters heat...



. and fridges freeze...

. at exactly the right temperature!



Modern **Teddington** gas controls make life easier for a lot of people—from appliance manufacturers to housewives and boilermen. For a **Teddington** thermostat keeps a rigid, unwavering eye on the gas during an appliance's entire useful life. That's why more and more manufacturers specify **Teddington** controls. Deliveries are quick. Spares are plentiful. And bulk order prices are tempting. May we quote you one?

Teddington

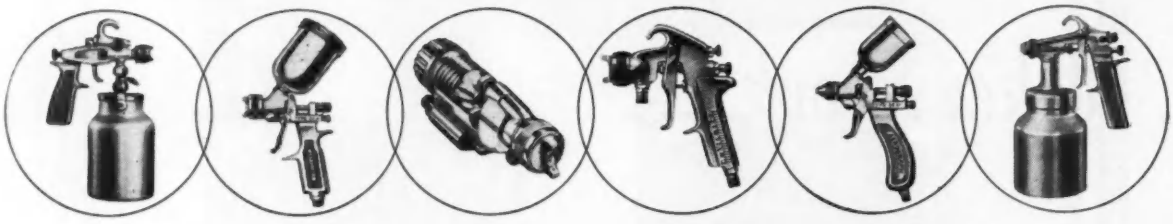
THE BRITISH THERMOSTAT COMPANY LIMITED

The largest Manufacturers of automatic controls in Europe

Sunbury-on-Thames, Middlesex. Telephone: Sunbury-on-Thames, 456.

SPRAYLOGICS-the Facts of Spray Painting

Which would you use to finish your product?

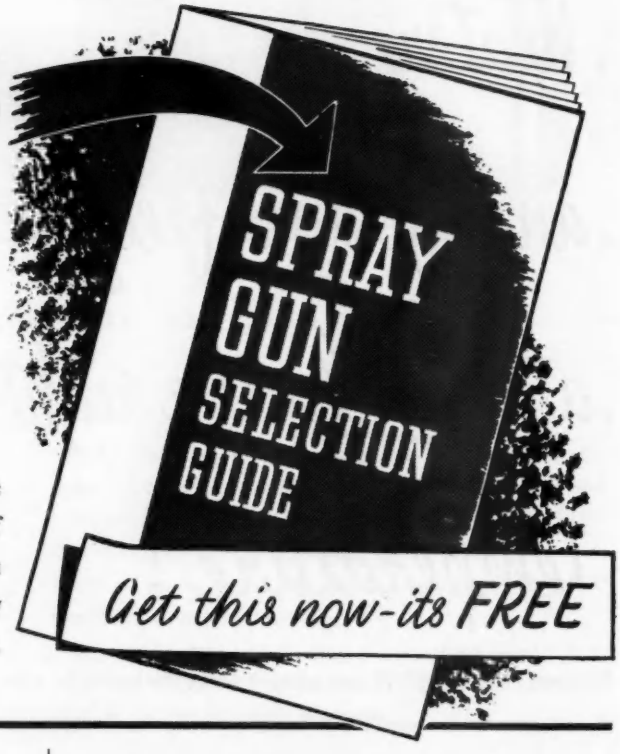


YOU'LL FIND THE ANSWER HERE

(No. 2 of a series)

"Spray-Gun Selection Guide"

Gives you in handy illustrated form, the right choice of gun, and of nozzle and air cap, for every kind of finishing work. Never before has this information been available in such a compact guide. It will pay you to have a free copy — write now to Dept. 20 R.



No. 3 COMING SHORTLY

"Spray-Gun Motion Study"

DEVILBISS AEROGRAPH

THE SYMBOL OF SERVICE

The Aerograph Co. Ltd., Lower Sydenham, London, S.E.26 *Telephone: Sydenham 6060 (8 lines)*

Branches and Showrooms: LONDON · BIRMINGHAM · BRISTOL · GLASGOW · MANCHESTER

T.A. 5408

INDEX TO 'JOURNAL' ADVERTISERS

A — PAGE

A.C.E. Machinery, Ltd. ... ...
Abbott, Birks & Co., Ltd. ... ...
Accurate Recording Instrument Co. ... ...
Acme Wringers, Ltd. ... ...
Adequate Weighers Ltd. ... ...
Autogen Co., Ltd. 19
Autograph Co., Ltd. 22
Baker & Mackay, Ltd. ... ...
Allan Taylor (Engineers) Ltd., ...
Avery Gas Water Heaters, Ltd. ... ...
Avery Gas Water Heaters, Ltd. (F.A. Neat) ...
Avonmore, Benson, Pease & Co ... ...
Ashworth, Thos., & Co., Ltd. ... ...
Associated Lead Manufacturers, Ltd. ... ...
Associated Lead Manufacturers, Ltd. (Rustodian) 59
Atlas Preservative Co., Ltd., ... 13
Autocontrol Boilers Ltd. 57
Automatic Telephone & Electric Co., Ltd. ...
Automotive Products, Ltd. ... ...
Averill, C. R. Ltd. ... ...

B

Bale & Church, Ltd. 61
Balfour, Henry, & Co., Ltd. ... ...
Barwaco Meters, Ltd. ... ...
Bell's Asbestos & Engineering, Ltd. ... Cover I
Benham & Sons. Ltd. ... ...
Blakeley Firth, Sons & Co., Ltd.,... 6
Bolton's Superheater & Pipe Works, Ltd. ...
Booth, John, & Sons (Bolton), Ltd. ... ...
Bratt Colbran, Ltd. ... ...
Bray, George, & Co., Ltd. ... ...
Bray, W. E., & Co., Ltd. ... ...
British Flint & Cerium Manufacturers, Ltd. ...
British Gas Purifying Materials Co. ... ...
British Oxygen Co., Ltd. ... ...
British Rototherm Co., Ltd. 58
British Thermostat Co., Ltd. 21
British Thomson Houston, Ltd. 7
British Tyre and Rubber Co., Ltd. ... ...
British Vacuum Cleaner & Engineering Co., Ltd.
Broadbent, Thomas, & Sons, Ltd. 58
Brockhouse Heater Co., Ltd. ... ...
Broom & Wade, Ltd. ... ...
Brown, J., & Co., Ltd. ... ...
Bugden, Thos., & Co. ... ...

C

Cambridge Instrument Co., Ltd. ... ...
Cannon (Holdings), Ltd. ... ...
Cascade Water Coolers Ltd. ... ...
Cementation Co., Ltd. 2
Chamberlain Industries, Ltd. ... ...
Chemical Engineering Wiltons, Ltd. ... ...
Chemical & Insulating Co., Ltd. 55
Cinema-Television, Ltd. ... ...
Clapham Bros., Ltd. 10
Clayton, Son & Co., Ltd. ... ...
Clifford Engineering Co., Ltd. ... ...
Cohen, George, Sons & Co., Ltd. 12
Concrete Proofing Co., Ltd. 54
Consolidated Pneumatic Tool Co., Ltd. ... ...
Cort, Robert, & Son, Ltd. ... ...
Cowper Penfold & Co., Ltd. ... ...
Cox & Danks Ltd. ... ...
Crane, Ltd. 15
Crone & Taylor, Ltd. ... ...
Crosby & Co., Ltd. ... ...
Crossley Bros. ... ...
Curtis, A. L., & Co. ... ...
Cutler, Samuel, & Sons, Ltd. ... ...

D

Davenport Engineering Co., Ltd.... ... ...
Davey, Paxman & Co., Ltd. ... ...
Dawe Instruments, Ltd. ... ...
De la Rue, Thomas, & Co., Ltd. (Gas Group) ...
Demolition & Construction Co., Ltd. ... ...
Dempster, R. & J., Ltd. ... ...
Dempster, Robert, & Sons, Ltd. ... ...
Derbyshire Silica Firebrick Co., Ltd. ... ...
Dexion, Ltd.... ... ...
Diaphragm & General Leather Co., Ltd.... ... 16
Dick, R. & J., Ltd. 2
Donkin (The Bryan) Co., Ltd. ... ... Cover II
Douglas, Robert M., (Contractors), Ltd. ...
Douglas, William, & Sons, Ltd. ... ...
Drakes, Ltd. ... ...
Drew, H. B., Ltd. ... ...
Dunlop & Ranken, Ltd. ... ... Cover IV
Dunlop Rubber Co., Ltd., (Gen. Rubber Goods Div.) ... ...

E

Essiclene Porcelain Enamel Ltd.... ... ...
Edgar, William, & Son, Ltd. ... ...
Elcontrol, Ltd. ... ...
Electrofio Meters Co., Ltd. ... ...
Elliott Bros. (London), Ltd. ... ...
English Electric Co., Ltd. ... ...
Etherer, Ltd. 8
Evershed & Vignoles, Ltd. ... ...
Exode, Ltd. ... ...
Ewart Chainbelt Co., Ltd. ... ...
Expanded Metal Co. Ltd. ... ...

F

F. C. Construction Ltd., ...
Fireglass, Ltd. ... ...
Fiwel, S., & Co., Ltd. 48

PAGE

Fluxite, Ltd. ... ...
Fowler, John, & Co. (Leeds), Ltd. ... ...
Franki Compressed Pile Co., Ltd. ... ...
Fraser & Chalmers, Engineering Works ... ...
Fry's Metal Foundries, Ltd. ... ...
Fyffe & Co., Ltd. ... ...

G

Gas Chambers & Coke Ovens, Ltd. 60
Gas Purification & Chemical, Ltd. 61
General Descaling Co., Ltd. ... ...
General Electric Co., Ltd. ... ...
General Gas Appliances, Ltd. 11
Gibbons Bros., Ltd. ... ...
Gibbons (Dudley), Ltd. 9
Gibson, John, & Son, Ltd.... ... ...
Glover, George, & Co., Ltd. ... ...
Glover, Thomas, & Co., Ltd. 26
Godfrey, Sir George, & Partners (Industrial), Ltd.
Goodall Clayton & Co., Ltd. ... ...
Goodyear Mechanical Goods ... ...
Grant & West, Ltd.... ... ...
Graphite Products, Ltd. ... ...
Green, E., & Son, Ltd. ... ...
Green & Boulding, Ltd. 61
Gunite Construction Co., Ltd. ... ...

H

Hamilton, A. H., & Co., Ltd. 54
Hardman & Holden, Ltd. 4
Harris & Pearson, Ltd. ... ...
Harris Engineering Co., Ltd. ... ...
Harrisons (London) Ltd., ... 62
Harvey, G. A., & Co. (London) Ltd. ... ...
Hawkins, W. T., & Co. ... ...
Hewitt Construction Co., Ltd. ... ...
Hick Hargreaves & Co., Ltd. ... ...
Hilmor, Ltd. ... ...
Hills (West Bromwich) Ltd. ... ...
Holmes, W. C., & Co., Ltd. 63
Honeywell-Brown, Ltd. ... ...
Horseley Bridge & Thomas Piggott, Ltd. ...
Horstmann Gear Co., Ltd. ... ...
Howden, James, & Co., Ltd. ... ...
Humphreys & Glasgow, Ltd. 24

I

Ideal Boilers & Radiators, Ltd. ... ...
I.C.I., Ltd. (Metals Division) ... ...
Inertol Co., Ltd. ... ...
Ingham, John, & Sons, Ltd. ... ...
International Combustion, Ltd. ... ...

J

Jeavons, E. E., & Co., Ltd. ... ...
Jeavons Engineering Co. 6
Jenkins, W. J., & Co., Ltd. ... ...
Jobling, James A., & Co., Ltd, ...

K

Kesy, E. C. & J., Ltd. ... ...
Keith Blackman, Ltd. 64
King, Geo. W., Ltd. 19
King, Walter, Ltd. 61
Kings Patent Agency, Ltd. ... ...
Kirk & Co. (Tubes), Ltd. ... ...
Kirkham Hulett & Chandler, Ltd. ... ...
Kleenoff Co. ... ...

L

LaFarge Aluminous Cement Co., Ltd. ... ...
Laidlaw, R., & Son (Edin.), Ltd. 57
Lamont, James H., & Co., Ltd. 16
Lanarkshire Bolt & Rivet Co., Ltd. ... ...
Lancashire Dynamo & Crypto, Ltd. ... ...
Le Bas Tube Co., Ltd. ... ...
Lionweld, Ltd. ... ...
Lind, Peter, Ltd. ... ...

M

Macpherson, Donald, & Co., Ltd. ... ...
Magnetic Valve Co., Ltd. 5
Main, R. & A., Ltd 50, 51
Marco Conveyor & Engineering Co., Ltd. ...
Master Gas Cookers, Ltd. ... .
Meigh Castings, Ltd. ... ...
Meltham Silica Fire Brick Co., Ltd. 25
Mercol Products, Ltd. ... ...
Messenger & Sons, Ltd. ... ...
Metropolitan Leather Co., Ltd. ... ...
Milnes Meters, Ltd. 8
Mitcham Smelters, Ltd. ... ...
Mitchell, H., & Co. ... ...
Moler Products, Ltd. ... ...
Monk, A., & Co., Ltd. ... ...
Morgan Crucible Co. Ltd.... 20
Morris Commercial Cars, Ltd. ... ...

N

National Benzole Co., Ltd.... ... ...
National Enamels, Ltd. ... ...
New Conveyor Co., Ltd., ...
Newton Chambers & Co., Ltd. ... ...
Norwest Construction & Co., Ltd. 1
Nu-Swift, Ltd. 61

O

Oakland Metal Co., Ltd., ... 61
Olding, Jack, & Co., Ltd. ... ...
Oxley Engineering Co., Ltd. ... ...

P

Parkinson & Cowan (Gas Meters), Ltd. 26
Parkinson Stove Co., Ltd. ... ...
Pass, E., & Co., Ltd. ... ...
Peckett & Sons, Ltd. ... ...
Peebles & Co., Ltd. 14
Pegson, Ltd. ... ...
Perl Controls. Ltd. ... ...

PAGE

Plus Gas Co., Ltd. ... ...
Pollock & Peel, Ltd. 64
Power Gas Corporation, Ltd ... ...
Pratt Engineering Co. ... ...
Press, William, & Son, Ltd. ... ...
Pulsometer Engineering Co., Ltd. ... ...

R

R.T.S.C. Home Sales Ltd. 18
Radiant Heating, Ltd. ... ...
Radiation, Ltd. 46, 47
Rawlplug Co., Ltd. ... ...
Reavell & Co., Ltd. 54
Richmond Welding Co. 61
Riley, A. J., & Son, Ltd. ... ...
Roberts, R. E., & Sons, Ltd. ... ...
Robinson, J. H., & Co. (Liverpool), Ltd. ...
Royles, Ltd. ... ...
Russell Bros., (Walsall), Ltd. 55
Russell, R., & Sons, Ltd. 58

S

Salter, T. E., Ltd. ... ...
Saunders Valve Co., Ltd. ... ...
Scottish Non-Ferrous Tube Industries, Ltd. ...
Senior Economisers Ltd. ... ...
Siebe Gorman & Co., Ltd.... ... ...
Sigma Instrument Co., Ltd. ... ...
Simon-Carves, Ltd. ... ...
Simon, Richard, & Sons, Ltd. ... ...
Sisson, W., & Co., Ltd. ... ...
Slingsby, W., & Co., Ltd. ... ...
Smith Meters, Ltd. ... ...
Smith, Thos. & Sons (Rodley), Ltd. ... ...
Southalls (Birmingham) Ltd. ... ...
Spence, Peter, & Sons, Ltd. ... ...
Spencer Bonecourt, Ltd. ... ...
Sperryn & Co., Ltd. ... ...
Standard Furnace & Setting Co., Ltd. ... ...
Stanton Ironwork Co., Ltd. ... ...
Staveley Iron & Chemical Co., Ltd. ... ...
Stein, John G., & Co., Ltd. ... ...
Stelcon (Industrial Floors), Ltd. ... ...
Stephenson Developments (Hudd.) Ltd ... ...
Stewart & Gray, Ltd. ... ...
Stewarts & Lloyds, Ltd. ... ...
Stoves, Ltd. 3
Strachan & Henshaw, Ltd.... ... ...
Stringer Bros. ... ...
Sugg, William, & Co., Ltd. ... ...
Summerson, Thos., & Sons, Ltd. ... ...
Sutcliffe Speakman & Co., Ltd. ... ...
Sutherland, A. G., Ltd. ... ...
Sutherland, J. G. & sons Ltd. ... ...

T

Thomas & Bishop, Ltd. ... ...
Thomas (Richard) & Baldwins, Ltd. ... ...
Thompson, John, Conveyor Co. ... ... Cover II
Thorp, Thomas, & Co., Ltd. ... ...
Tubela Engineering Co., Ltd. ... ...
Tucker Eyelet, Geo., Co. Ltd., ...
Tully, Sons & Co., Ltd. ... ...
Turners Asbestos Cement Co., Ltd. ... ...

U

Underpressure Engineering Co., Ltd. ... ...
United Kingdom Construction & Engineering Co., Ltd. ... ...

V

Vale, Thomas, & Sons, Ltd. ... ...
Visco Engineering Co., Ltd. ... ...
Vulcan Stove Co., Ltd. ... ...

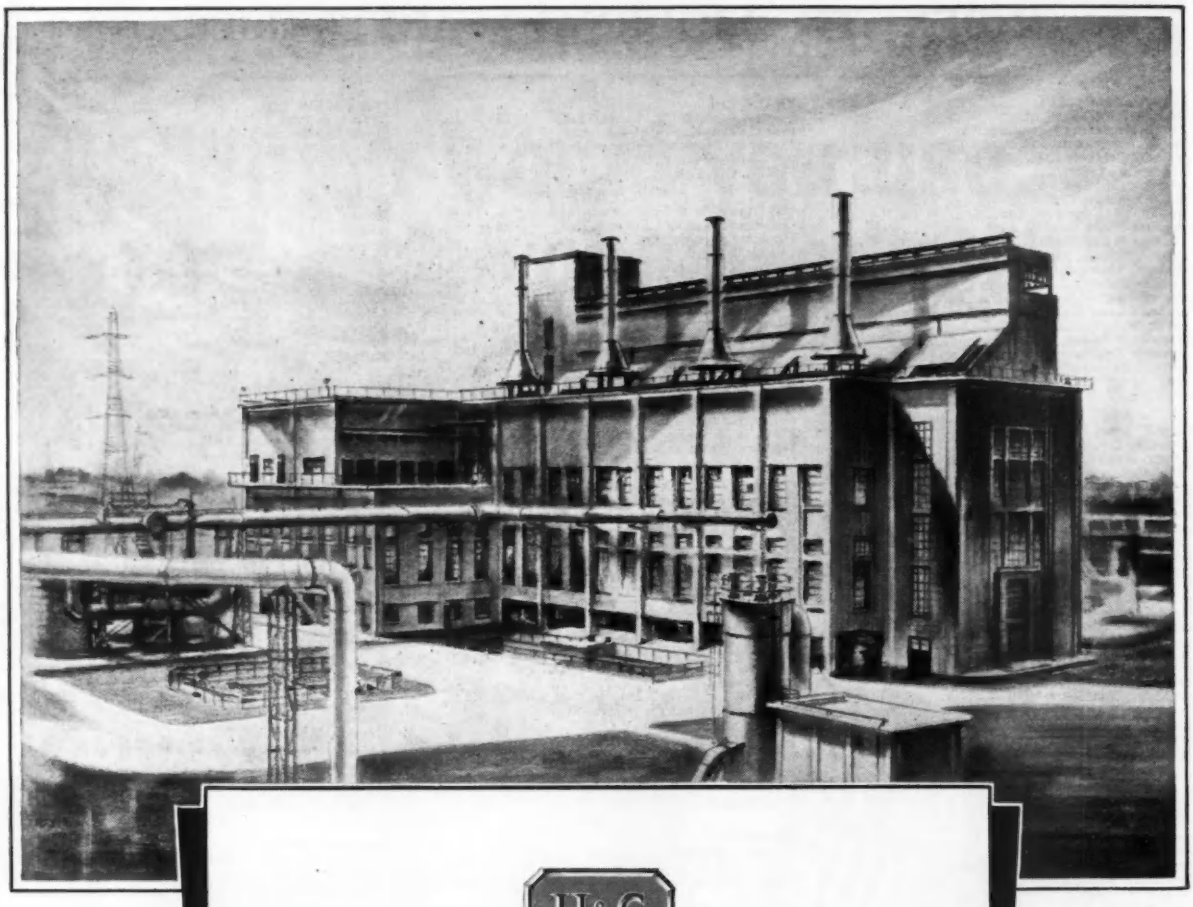
W

Wailes Dove Bitumastic, Ltd. ... ...
Wakefield, C. C., & Co., Ltd. ... ...
Wakelin, F. H., Ltd. ... ...
Walker, C. & W., Ltd. ... ...
Walker, Crosweller & Co., Ltd. ... ...
Waller, George, & Son, Ltd. ... ...
Ward, Thos. W., Ltd. ... ...
Warsop Power Tools Ltd.... ... ...
Weatherill, F. E. Ltd., ...
Webster, H. R., Ltd. ... ...
Wellington Tube Works, Ltd. ... ...
Wellman Smith Owen Engineering Corpn., Ltd. 56
West's Gas Improvement Co., Ltd. ... Cover III
West Hunwick Silica & Firebrick Co., Ltd. ...
West's Piling & Construction Co. ... ...
Westwood & Wrights, Ltd. 55
Whessoe, Ltd. 17
Whittaker Ellis Ltd., ...
Wilkes, A. H., & Co., Ltd. ... ...
Willey & Co., Ltd. ... ...
Williams, John E., Ltd. ... ...
Williamson Cliff, Ltd. ... ...
Wilson, George, Gas Meters, Ltd. ... ...
Winn & Coales, Ltd. ... ...
Woodall-Duckham Vertical Retort & Oven Construction Co. (1920), Ltd. 41
Wood, Hugh, & Co., Ltd. ... ...
Wright, Alexander, & Co., Ltd. ... ...

Y

Yorkshire Copper Works, Ltd. ... ...

Agencies ... .
Appointments Vacant 61, 62
Appointment Wanted ... ...
Contracts Open ... ...
Educational ... ...
Fellowship ... ...
Miscellaneous ... ...
Notice ... ...
Patents ... ...
Plant For Sale 62
Publications ... ...
Repairs ... ...



H&G

INSTALLATIONS ABROAD

Carburetted Water Gas Plant, Gennevilliers, Paris, built by

SOCIÉTÉ DE CONSTRUCTION D'APPAREILS POUR
GAZ A L'EAU ET GAZ INDUSTRIELS

HUMPHREYS & GLASGOW LTD.

HUMGLAS HOUSE · CARLISLE PLACE · LONDON SW1

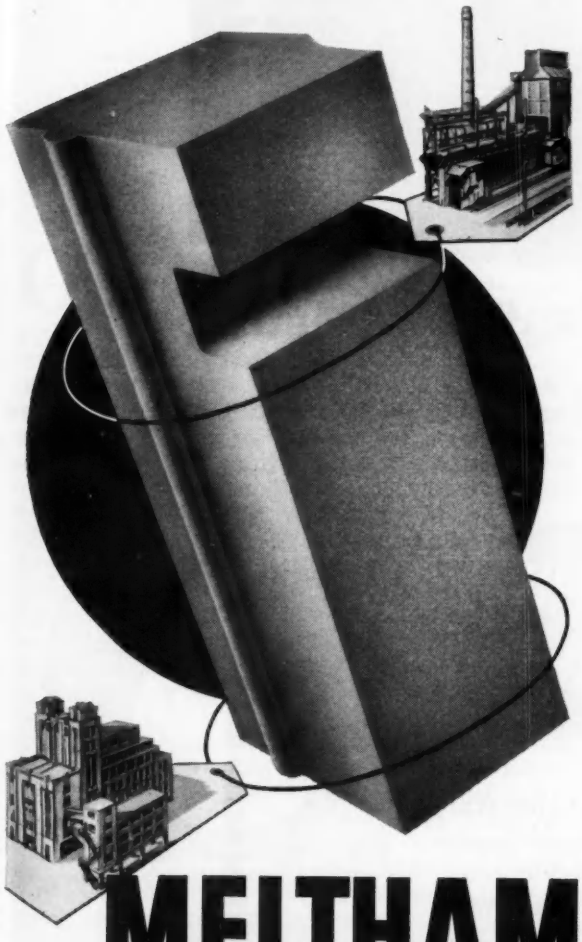
Telephone: VICtoria 3961

ESTABLISHED 1892

50 YEARS SERVICE

to the

CARBONISING INDUSTRY



MELTHAM

SILICA SHAPES AND BRICKS

LOW THERMAL EXPANSION
TRUE TO SHAPE & SIZE · FIRST CLASS FINISH
HIGH RESISTANCE TO ABRASION

THE MELTHAM SILICA FIREBRICK CO. LTD
MELTHAM NEAR HUDDERSFIELD
TELEPHONE: MELTHAM 321 TELEGRAMS: "REFRACTORY, MELTHAM"

Gas Journal

105th YEAR OF PUBLICATION

EDITOR: NORMAN S. SMITH, B.Sc. (Gas Eng.)

11, BOLT COURT, FLEET ST., LONDON, E.C.4. Telephone: CENtral 2236-7 Telegrams: Gasking, Fleet.

VOL. 275 NO. 4700 July 1, 1953

CONTENTS

Page

EDITORIAL COMMENT

Gas in Japan ... 27
Public Opinion ... 28
A New Deal for Coke ... 28

LETTER TO THE EDITOR

Throughput in C.V.R. T. H. Prater ... 30

PERSONAL ... 29

OBITUARY ... 30

NEWS OF CURRENT EVENTS

Diary ... 30
1953 Journal Directory ... 30
Change of Name ... 30
Fuel Efficiency Company to be Set Up ... 30
London Juniors' Ladies' Day at Cambridge ... 31
London and Southern Section, Institution of Gas Engineers, Visits Brighton ... 32
Gas Council Introduces a New Coke Appliance Handbook ... 33
Unit Costing ... 40
Census of Production ... 40
Annual Meeting of the Wales and Monmouthshire Junior Gas Association ... 52
Belfast Gas Surplus ... 52
Retirement of Southern Gas Consultative Council Chairman ... 52
Ninth Naafi Club ... 53
Liverpool Lighting ... 53

FEATURE ARTICLES

Natural Gas in Great Britain ... 34
Automatic Control of Gas Producers ... 38
Gasworks Liquors. By J. J. Priestley, M.Sc., W. C. Holmes & Co., Ltd. ... 39

TECHNICAL RECORD

Leaders of the Industry: Their Tasks and Qualifications. By C. R. M. Croft, B.A., General Manager, Sussex Division, South Eastern Gas Board ... 36
Blending Coal for Carbonisation. By G. E. Hall, M.Sc., and G. W. Lee, M.Sc. ... 42

Subscription Rates: Home and Empire 52/-; Foreign 60/-

Full Publishers' Notice: See Page 61.

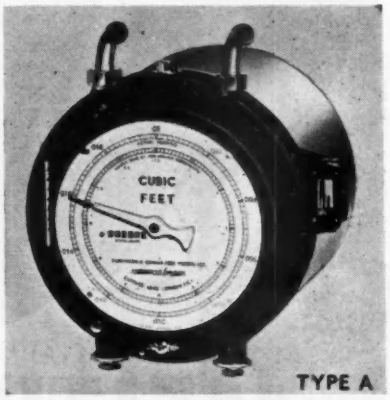
Gas Journal . . . . Walter King Ltd.

THOMAS GLOVER
& CO. LTD., EDMONTON
LONDON, N.18 & BRANCHES

We also supply 1/- & 2/6 Meters.

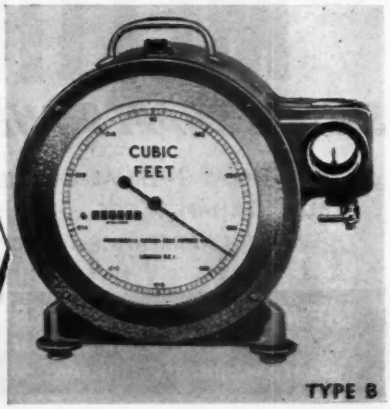
For accurate MEASUREMENT of small volumes of GASES

Type A Test Meter for the Laboratory
A Meter which sets up entirely new standards of accuracy in Engineering, Industrial and Medical Research.



TYPE A

Type B Portable Test Meter
For normal Works tests, light weight, accurate, easily serviced and maintained.



TYPE B

PARKINSON & COWAN GAS METERS
(A DIVISION OF PARKINSON & COWAN LTD)
ENGINEERING DEPARTMENT (Q)
COTTAGE LANE WORKS, CITY RD., LONDON, E.C.1
Phone: CLErkenwell 1766

GAS JOURNAL

VOL. 275. No. 4700 105TH YEAR July 1, 1953

GAS IN JAPAN

OF all the countries in which the gas industry operates perhaps the least familiar to us in the British Isles is Japan, the land of the supreme imitator and the phenomenal recovery. Japan suffered dearly for its part in the war, and its extraordinary climb back to economic stabiliy, due partly to a peculiar inborn resilience and partly to the startlingly new mould into which the ravaged country was pressed by its conquerors, has had many by-products. It may be that one of these is a greater desire or ability to make itself known and understood by the rest of the world. Gradually information about Japan and its efforts is being circulated, and we have had an opportunity of studying a new report by the Japan Gas Association on the gas industry in that country. The survey is particularly interesting because most of the information comes to us fresh and uninfluenced by former knowledge.

There are at present 78 gas enterprises—of which three are out of business—comprising 162 gasworks, six of which are not being used. Eleven are of municipal administration, while the rest are joint-stock companies. The scope of gasworks operation varies greatly, the smallest consuming less than one ton of coal per day, while the largest consumes about 1,500 tons. The demand is principally centred in and around large cities: Tokyo, Yokohama, Kyoto, Osaka, Kobe, and Nagoya alone consume about 82% of the total gas, and it is interesting to note that these cities are supplied by only three big gas companies—the Tokyo, Osaka, and Toho.

The second world war threw the industry into an abnormal condition. The demand for gas for industrial purposes became so great that several new companies were established with the sole purpose of supplying gas to war production plant. In 1942 the gas industry reached its peak, consuming more than 3 mill. tons of coal annually and supplying most of its gas to industry and, as a result, restricting domestic consumption. Government recommendations resulted in 120 enterprises being reduced to 75 in number by absorption. In due course bombardment, shortage of coal, loss of consumers, and long deferred repair to plants and piping took its toll, and in 1946 coal consumption was down to only a quarter of that of the peak year of 1942, or half of that of the pre-war years. Things became worse, and following the war and until the end of 1949 gas in many areas was supplied only a few hours a day. Since then, however, the industry has steadily recovered, and in 1952 the number of consumers approached 77% of the pre-war level, while the gas production was in excess of the pre-war figure.

Gas producing plants vary greatly in type. For example, the latest statistics show 661 coke ovens, 129 small chamber ovens, 4,894 horizontal retorts, 92 continuous verticals, and 102 producers. Water gas plants have fallen into disuse owing to the high cost of imported gas oil, and in 1952 oil gas plants were introduced to meet peak loads. On the other hand, producer gas made from small coke is now widely used for both underfiring coke ovens and diluting coal gas.

Ordinary gas coals are unsuitable for the Japanese gas industry, which is also an important source of supply of foundry coke, and the larger works equipped with standard coke ovens consume various kinds of high grade coals for this purpose. The report states that blending of semi-coke (' char ' as it is called in America), petroleum coke, pitch coke, and/or coke breeze has shown good results.

In small cities gas is distributed by holder pressure; in larger cities high pressure distribution is practised. For trunk mains cast iron piping is employed, while steel pipes are mostly used for smaller supplies. However, there is a tendency to replace cast iron pipes with welded steel piping in accordance with improved technique of electric welding. Standard calorific values of gas before the war in larger cities were about 470, but they are now standardised at 405.

As much as 68% of the total gas is used for household purposes (including public use), but standards of domestic gas appliances, except those of the security forces, are still very low, reflecting the rather low standard of living of the people. However, there are signs of a rapid improvement by the co-operation of gas engineers and appliance makers. Industrial appliances have improved little since the war; the best customers in this sphere are glass and metal-machinery industries. Meters are invariably of the tin type, except with very large

consumers, for which wet meters are used; there are no prepayment meters in use at present.

The Japan Gas Association was founded in 1947. However, an association of a similar nature had existed in Japan for a long time. The first Imperial Gas Association was founded in 1912 and existed for 33 years until 1945, when its name was changed to the Gas Industry Association. The latter, after changing its name twice since then, was dissolved in 1947. The present Association's objects are similar in character to those of our own Institution; its officials consist of one president, one vice-president, two executive directors, 27 directors and two auditors, all elected every two years at a general meeting. All the utility gas enterprises in Japan are regular members, while those who are engaged in business relating to the gas industry are associated members. Education is a matter constantly under review, but the survey states that the installation of a suitable educational and research organisation relating to coal carbonisation, with special reference to gas engineering, in co-operation with existing universities and laboratories, although highly desirable, has not yet been undertaken in Japan.

It is interesting to have these facts and to learn something about another branch of the industry overseas. Excellent as it is, the survey leaves a number of questions unanswered. For example, we would like to know how cooking appliances in Japan reflect the eating customs of its people and what methods are employed to publicise them—somehow we envisage an almond-eyed Mr. Therm! And what about the Japanese relegation of 'traders,' to associate membership of the country's professional body? The Japan Gas Association here has something to learn (*not from the junior associations of Great Britain,* but from the Institution of Gas Engineers) if it is successfully to fulfil its aims. Maybe the International Gas Union will give a lead.

PUBLIC OPINION

NATIONALISATION of the gas industry was accomplished, comparatively smoothly, in an atmosphere of acute political controversy, but those who had served it well in the old days and who recognised that they must go on doing their best to ensure its continued healthy existence saw from the outset that there was no room for politics in the day to day running of the industry. Operating it under an Act of Parliament inevitably involves circumstances different from those we knew before vesting day. With the passing of the years those who came over from private and municipal enterprise to become servants of the State will grow older and a new generation will be recruited. There will be ever increasing specialisation and, as Mr. C. R. M. Croft said in his Chairman's Address to the London and Southern Section of the Institution of Gas Engineers—published on later pages—they will fall under three principal headings—those with technical training, engineers, chemists, etc., to ensure efficient development and running of production and distribution plant; people trained in commercial aspects, to realise the profits made in the retort house; and accountants to build up the financial picture.

It was fitting, in view of the emphasis now being given (by the Institution in its residential course on management and in other directions) to the function of management, that a member of the industry with so long a family gas industry tradition and gas engineering background should have devoted his address to an analytical study of the problems that confront the industry today. Son of a past President of the Institution, and nephew of a past President of the forerunner of the London and Southern Section, Mr. Croft has spent his life in the industry, and whether he liked nationalisation or not when it first came about he is an outstanding example of those who have the best interests of the industry at heart. In his address he touched on a few of the problems that must be constantly in the thoughts of all who serve the industry. Some it is within their power to tackle and control; some unfortunately are outside their jurisdiction. Besides the natural pride of doing a job well, the reputation for service to the public of which everyone in the industry is so proud is governed by the fact that they realise they are in the job to earn their livelihood and it is only by giving service that this desirable state of affairs can be achieved. 'In other words we have got to sell our products if we are to live. This means that the price has got to be right, and it is towards the aim of providing the cheapest possible gas that all our efforts are directed.'

Like all great enterprises the gas industry must pay due heed to public opinion or it will endanger its livelihood. As Mr. R. S. Johnson, Deputy Chairman of the South Eastern Gas Board, said in thanking Mr. Croft for his address, the industry is entering a difficult phase in which it is selling against growing competition and facing costs outside its control which are ever rising. It is fortunate in having men like Mr. Croft who face the future with an almost irrational hope. Mr. T. C. Battersby, a former Chairman of the Section, who seconded the vote of thanks to Mr. Croft, reminded us that capital outlay on new plant has reached a level at which it outweighs the advantages of the higher thermal yields to be attained thereby. We cannot, as in the old days, save by spending. The call today is for increased efficiency by reorganisation and a reduction of wasted effort.

A NEW DEAL FOR COKE

FOR MANY YEARS we have deplored the unsatisfactory state of the coke market, a market in which one is never certain whether demand will outstrip supply or supply exceed demand. In more recent times difficulties of selling coke have been less acute, and the extraordinary popularity of so-called 'improved' grates and other solid fuel appliances has opened vistas of a vast market for coke which not only cannot be fully explored now, but, if the scope remains even at its present level, can never be explored as we should wish. The point was clearly made by Mr. Harold V. Shelton, Chairman of the British Ironfounders' Association, when he spoke at the launching of the Gas Council's new *Coke-burning Appliances Handbook* at the Building Centre (see p. 33). 'While the production of all types of coke for domestic use is increasing,' he said, 'there is only in the region of 5 mill. tons available and therefore, the main domestic solid fuel load will, for some years, have to be taken by bituminous coal.' Mr. Shelton went on to say that unfortunately the quality in recent years has left a lot to be desired. Don't we know it? The volume of coke complaints received in some quarters has been extremely depressing. And there is little evidence of any major improvement, although it is true to say that substantial efforts are being made.

The excellent send-off given to the new handbook suggests that there is a change of heart on the selling side. At last coke sales are being taken seriously. But, although we commend this effort to allow coke to live down its somewhat blemished reputation, it will all be wasted if the product itself is still unreliable in both supply and quality. If we are indeed to be a two-fuel industry, *both* fuels must receive the care and attention they deserve.

Personal

MR. R. J. ROGERS, Chairman of the Parkinson Stove Co., Ltd., was among 13 new members initiated into the Stechford Division of the Parkinson & Cowan Group Long Service Association at its annual outing last month, with 21 years service to his credit. Among those present at the initiation were Mr. T. S. Jordan (55 years), Mr. H. A. Hobson (53 years), and Mr. W. Lawson Hurdman, a non-member guest.

MR. IVOR JONES, who for many years was connected with Lane Brothers (Tar Distillers), Ltd., and their associated companies and who was a Director of Peterborough and District Tar Distillers, Ltd., has joined Tar Residuals, Ltd., and is leaving immediately to manage Tar Residuals Inc., 420, Lexington Avenue, New York 17.

MR. JOHN POWDRILL, M.B.E., General Manager and Engineer of the Pontypool undertaking and Chairman of the Pontypool Group Committee of the Wales Gas Board, has been appointed General Manager and Engineer of the Cardiff undertaking as from September 1, following the retirement of Mr. F. Boardman. Mr. Powdrill first entered the gas industry with the Accrington Gas and Water Board, and after serving his articles there he was for six years assistant general manager. From 1936 to 1939 he was General Manager and Engineer of the Rawmarsh and Parkgate Gas and Water Department, and in 1939 he was appointed General Manager and Engineer of the Pontypool Gas and Water Company which, on vesting date, was taken over by the Wales Gas Board. A complete new gasworks on a new site, designed for an ultimate capacity of 12 mill. cu. ft. per day, has been brought into operation under Mr. Powdrill's supervision, and premises in the centre of the town have been converted into modern showrooms and general offices. During the war years he was a member of the South Wales Gas Engineering Advisory Board, and just after the war he was a member of the working committee set up by the Ministry of Fuel and Power which submitted a report on the South Wales grid (Eastern Area). Before nationalisation Mr. Powdrill was a member of the regional committees of all the national gas organisations, and since 1949 he has served on the main functional committees of the Wales Gas Board. He was Chairman of the Wales and Monmouthshire Section of the Institution of Gas Engineers in 1951, and in that year he was awarded the M.B.E. for his services to the industry. He has latterly undertaken the duties of Secretary of the Section, whose members will join in congratulating him on his appointment to one of the most responsible positions in the industry in Wales.

MR. F. BRIAN HOLMES has been elected Chairman of the associated company of the Bryan Donkin Co., Ltd., British Furnaces, Ltd., in succession to the late Mr. D. M. Henshaw.

ALDERMAN HUW T. EDWARDS, J.P., of Shotton, Flintshire, has been appointed by the Minister of Fuel and Power to be a part-time member of the Wales Gas Board. The appointment will date from September 1.

MR. W. E. WEBB, J.P., Chairman of the British Gas Staff Association, who for some years has been Chairman of the Hounsil (Middlesex) Local Employment Committee, has recently been appointed by the Minister of Labour and National Service to the Chairmanship of the reconstituted and enlarged Hounslow, Staines and Feltham District Employment Committee.

MAJOR DESMOND ABEL SMITH, M.C., has been elected Chairman of the Bryan Donkin Co., Ltd., in succession to late Chairman, Mr. Daniel Mayon Henshaw. Major Desmond Abel Smith's father, Mr. Eustace Abel Smith, was Chairman of the Company for ten years up to his death in 1938. Major Desmond himself is on the Board of the Holding Company, B.H.D. Engineers, Ltd., and is a Director of the National Provincial Bank, Ltd.

MR. TOM JORDAN, who has been Sales Superintendent of the Parkinson Stove Co., Ltd., for 35 years, and has served the Parkinson and Cowan Group for a total of 55 years, retired on June 30. At a dinner on June 24, Mr. R. J. Rogers, Chairman, presented him with a gold watch, subscribed for by his colleages of all ranks. Mr. Jordan joined W. and B. Cowan, Ltd., as an office boy in 1898, and in 1918 he went to Birmingham to take over the post of sales superintendent with the Parkinson concern. In his earlier days he represented the firm in football, cricket, bowls and tennis. He was one of the founders of the firm's social and athletic club in 1926, and acted as club secretary for 21 years. When the Stechford Division of the Parkinson and Cowan Long Service Association was formed in December, 1950, Mr. Jordan became Chairman of the Division.

SIR GEORGE PAGET THOMSON, F.R.S., has been appointed by the Minister of Fuel and Power as Chairman of his Scientific Advisory Council in succession to SIR ALFRED EGERTON, F.R.S., who retired at the end of June. MR. KENNETH GORDON, C.B.E., M.C., has been appointed a member of the Council. Sir George Thomson has taken a leading part in the development of aeronautical and atomic research and is the author of a number of publications in those fields. Mr. Gordon is Director-General of Ordnance Factories, Ministry of Supply. Previously, he was Deputy Managing Director of Head, Wrightson Processes, Ltd., and was released to take the Ministry of Supply post in July, 1952. Before joining that company, he was joint Managing Director of the Billingham Division of Imperial Chemical Industries for 12 years and Managing Director of Trinidad Leaseholds, Ltd.

MR. ROBERT H. MORGAN, a member of the staff of the Coatbridge District, Scottish Gas Board, was on June 11 the recipient of an inscribed umbrella from his fellow members of the staff on the occasion of his having completed 50 years service with the undertaking.

MR. STANLEY JONES, Manager of the Western Section, Middlebrough Division, Northern Gas Board, who is leaving to take up the appointment of Divisional General Manager of the Wolverhampton Division of the West Midlands Gas Board was presented with a gold wristlet watch on behalf of his colleagues, by Mr. John W. Pallister, Divisional General Manager, at Middlesbrough. The presentation took place at the Coronation dinner of the Northern Gas Board Gasworks Branch of N.A.L.G.O. under the Presidency of Mr. F. Wetherill, attended by over 90 members of the staff. Mr. Jones went to Middlesbrough in 1945 as deputy to Mr. Pallister, then Chief Engineer and Manager of the Corporation Gas Department, and on nationalisation became Sub-Divisional Manager of the Western Section of the Middlesbrough Division, which included managing the Middlesbrough undertaking and its area of supply.

MR. FRANK BOARDMAN, Engineer and Manager of the Cardiff undertaking and Chairman of the Cardiff Group Committee of the Wales Gas Board, will retire on August 31 after nearly 40 years' service. He entered the gas industry at Salford, and after some years as chief assistant to the Bromley Gas Company, subsequently absorbed by the South Suburban Gas Company, he was appointed chief assistant engineer to the Cardiff Gas Company in 1914. Mr. Boardman was President of the Wales and Monmouthshire District Institution of Gas Engineers and Managers in 1929. He became Deputy Engineer, and was appointed Chief Engineer in 1941 when, on the retirement of Mr. H. D. Madden, the senior responsibilities were undertaken by Mr. R. J. Auckland as General Manager and Mr. Boardman as Chief Engineer. On nationalisation Mr. Boardman carried on his work as Engineer and Manager of the Cardiff undertaking.

Glasgow Corporation has approved a decision to create a smokeless zone in the city centre, 'in principle.' A subcommittee has been appointed to investigate the cost of installations, the extent of available supplies of fuel, the availability of alternative smokeless fuel sources, and the advantages to be derived from such a scheme. It is understood that already a selected area has been mapped out, of one mile by half a mile, and that subject to final approval and Government sanction this area will be tested as a suitable 'guinea pig' for a wider application of the policy.

LETTER TO THE EDITOR

THROUGHPUT IN C.V.R.

DEAR SIR,—It is observed that a letter with the above heading in your issue of June 24 contradicts your editorial statement of June 10, and that you yourselves now feel that a correction is justified.

Thirty-five years experience of continuous vertical retort carbonisation convinces me that your original statement is perfectly correct. Carbonisation takes place not only by transmission of heat by conduction from one piece of coal to the next but also by the transmission of heat by the nascent gases passing up *through* the retort charge.

When a coal charge is compact by virtue of 'fine grading,' the first factor of heat transmission plays the major part but does not make up by a long way for the reduction in the second factor. This is proved by the much higher temperature of the gas at the offtake, and by the invariable necessity for slowing-down the throughput, if gaseous therms in the coke are to be controlled when carbonising small coal.—Yours faithfully,

T. H. PRATER.

South Eastern Gas Board,
Addington Street, Margate.
June 25, 1953.

Obituary

MR. HERBERT E. WEBSTER, lately Sales Manager of George Glover & Co., Ltd., died on June 19 at St. Bartholomew's Hospital, aged 72. He served many years in the gas appliance industry, joining George Glover's in 1935.

MR. ARTHUR STEWART CAMPBELL, who for many years was Secretary and a Director of the former Wellingborough Gas Light Company, died at his home, Hatton House, Wellingborough, Northants., on June 25, aged 73. He resigned his secretaryship some seven years ago, but remained on the board of directors until the gas industry was nationalised.

Diary

July 1.—SOUTH WESTERN SECTION, I.G.E.: Summer Meeting and Ladies' Day. Torquay.

July 3.—MANCHESTER AND DISTRICT SECTION, I.G.E.: Chairman's Day, Preston.

July 7.—SOUTH EASTERN G.C.C., Katharine Street, Croydon, 2.15 p.m.

July 7.—EAST MIDLANDS G.C.C.: Victoria Station Hotel, Nottingham, 11.30 a.m.

July 7-10.—ROYAL SHOW, Blackpool. Gas Council exhibit.

July 30.—NORTH THAMES G.C.C.: Westminster City Hall, Charing Cross Road, W.C.2.

August 17.—WEST MIDLANDS G.C.C., Queens Hotel, Birmingham, 2.30.

The Aeromatic Company, Ltd., advise us that as from July 1, pressure of business has necessitated their acquiring larger premises. Their address is Aero Works, Eskdale Road, Trading Estate, Uxbridge, Middx., and the telephone Uxbridge 2533.

1953 'Journal' Directory

THE following changes have been notified during the past month. To keep the information in the 1953 edition of the *Gas Journal Calendar and Directory* up to date readers are invited to note these alterations (together with the appropriate adjustments relating thereto in the 'Personnel' section of the *Directory*, pp. 141-156):

Page 30.—NOTTS AND DERBY DIVISION: E. Bates, *Div. Sales and Service M.*

Page 56.—NORTH THAMES GAS BOARD: Bromley and Nine Elms (formerly Group II) and Fulham (formerly Group III) have been taken out of their groups and their respective Station Engineers—R. G. Plummer, W. E. Davies, and A. E. Haffner—have now the status of *Group Engineer.* Group II now comprises Romford, Poplar (where A. S. E. Lee, formerly Engineer, Commercial District) is now *Station Engineer*), Stratford, Bow Common, Lea Bridge, Kensal Green, Brentford and Southall. Group III comprises Hornsey, Mill Hill, Harrow, Staines, Ascot, High Wycombe, Slough (and Maidenhead), and Uxbridge; *Group Engineer,* J. W. Kaye, vice E. G. Stewart, retired. There is no longer a Group IV.

Page 119.—WARWICKSHIRE DIVISION: A. D. Duxbury, formerly *E. & M.,* Leamington District, now *E. & M.,* Leamington and Warwick Districts.

Page 120.—WORCESTERSHIRE AND HEREFORDSHIRE DIVISION: P. E. Gallaher, *Div. E.*

Page 120.—KIDDERMINSTER: D. W. Davison, *Group E. & M.,* vice J. H. Wainright; E. H. Morris, *Group Acct.*

Page 120.—REDDITCH: H. E. Chapman, *Group E. & M.,* vice P. E. Gallaher.

Page 132.—JOHNSTONE: Delete D. W. Davison, *Dist. M.* removed.

Page 182.—EASTERN SECTION: *Chairman,* B. Clarke (Lincoln); *Senior Vice-Chairman,* W. A. Evetts (Watford); *Junior Vice-Chairman,* J. H. Greenacre (Yarmouth).

Page 183.—SCOTTISH ASSOCIATION OF GAS MANAGERS: *Hon. Secretary and Treasurer,* W. Kirk, Inchgreen Gasworks, Greenock.

Page 183.—LONDON AND SOUTHERN JUNIORS: *President,* W. Johnson (South Eastern); *Senior Vice-President,* E. W. B. Dunning (Watson House); *Junior Vice-President,* N. R. Junkison (North Thames); *Hon. Secretary,* J. D. Grant (North Thames).

Change of Name

FROM TODAY (July 1) the name of the Woodall-Duckham Vertical Retort & Oven Construction Co. (1920), Ltd., has been changed to Woodall-Duckham Construction Co., Ltd. The change of name entails no change whatever in the business, management, or financial structure of the company.

Gifts such as chiming clocks, refrigerators, and vacuum cleaners, were presented to 46 men and women at Dudley, for service ranging between 25 and 50 years with the gas undertakings now under the West Midlands Gas Board. The presentations were made by Mr. Alex W. Lee, Deputy Chairman of the Board. Also at the tea were Mr. F. C. Briggs, Divisional General Manager, and district engineers and managers.

Fuel Efficiency Company to be Set Up

MR. GEOFFREY LLOYD, Minister of Fuel and Power, announced in Parliament on June 22 that an independent non-profit-making fuel efficiency company would be set up to develop an industrial advisory service which would eventually supersede the present service carried on by his Ministry.

This was one of the recommendations of the committee under the chairmanship of Sir Harry Pilkington which had investigated the provision of an enlarged advisory service, and whose report has been recently published. The recommendations of the committee had been accepted in principle by the Government.

In a written reply to a question by Mr. Gerald Nabarro, the Minister said the committee recommended that an independent non-profit-making company, limited by guarantee without share capital and set up by the British Productivity Council, who would appoint the governing body, should be formed to develop this advisory service.

The Productivity Council had accepted the responsibility for forming and sponsoring such a company on the lines recommended in the committee's report. Mr. Lloyd had asked the council to ensure that the Board of the new company was as representative as possible of all interests, including Scottish interests.

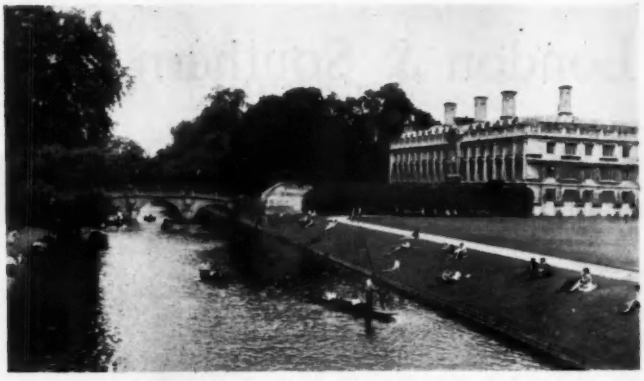
When set up the company could expect an income of £450,000. Promises of annual contributions had been received from the National Coal Board—£250,000—the British Electricity Authority—£100,000—and the Gas Council—£100,000. These contributions, which would be guaranteed for an initial period of five years, would be supplemented by fees charged for certain services and by voluntary contributions from individual industrial concerns, who would also give all possible support in other ways to the company.

'I do not consider that it would be possible to operate economically two separate industrial fuel efficiency advisory services,' continued Mr. Lloyd. 'The Ministry's industrial advisory services will therefore cease to function as the new company establishes its own. The testing instruments and equipment surplus to the Ministry's needs will be transferred to the new company, free of charge. The Ministry's technical staff will be given an opportunity to apply for appointment to the new company. Since I shall retain my responsibilities under the Ministry of Fuel and Power Act, 1945, for the promotion of the efficient use of fuel and power, I propose to arrange for one of my officials to be responsible, as an assessor, for liaison with the new company.'

MR. NABARRO asked the Minister whether he would state the arrangements in hand for conducting a survey of the potentialities for back-pressure generation; the number of firms in the United Kingdom to be approached for details of their respective power and process and heating steam consumption and the minimum coal consumption of such firms to qualify for inclusion in the survey; how long it was estimated the survey would take to complete; and what form the publication of the results of the survey would take.

MR. LLOYD replied that because very valuable fuel savings could be made by passing steam through engines or turbines before using it for heating purposes, he would make a survey.

The LONDON JUNIORS at *Cambridge*



THE nine months of the 1952-53 winter suddenly yielded to summer on Saturday, June 20, when a region of high pressure distribution centred over London and the Home Counties moved rapidly to fill the long-vacation depression over Cambridge. This welcome phenomenon coincided with the summer visit of the London and Southern Junior Gas Association, under the Presidency of Mr. C. D. Shann, himself a graduate of King's College. The event was chosen as the annual Ladies' Day and the notice of meeting remarked, almost with a note of anxiety, that the President looked forward to the members' support. In the fulfilment, there was a record assembly of over 300 to enjoy an interesting and æsthetic treat.

The rendezvous was the Cambridge gasworks, by invitation of the Eastern Gas Board. There, coaches were waiting to take the ladies into the city centre, while the members toured the works in parties under the command of Mr. E. H. Winch, Divisional Engineer.

Afterwards, luncheon was served at the Dorothy Restaurant; the whole party being by excellent and old-established custom the guests of their President's Area Board. Mr. Shann, being Assistant Distributing Engineer to the North Thames Gas Board, his Deputy Chairman, Mr. F. M. Birks, C.B.E., and Mrs. Birks had travelled from Brighton to welcome the Association.

In proposing the toast of the Association and the guests, Mr. Birks made reference to the great amount of good work which came from the London Juniors. Their accounts showed also the strength of their position, for he noticed that they had produced two lots of Transactions within a year. Incidentally, it appeared, too, how high printing costs were—an important aspect, nowadays, in the conduct of all such institutions and associations. As for his other guests, Mr. Birks made a generous reference to the Technical Press and warmly thanked the Eastern Gas Board and Mr. Hunter-Rioch (D.G.M., Cambridge) for their part in the day's proceedings.

Replying for the Association, Mr. Shann said that Mr. and Mrs. Birks had probably travelled further than any to attend the meeting, and he mentioned that they had had the unique and most gratifying experience of watching the great Spithead Review from the deck of the 'Falconer Birks.' Their Deputy-Chairman was, indeed, Admiral of the Fleet, and might also be referred to as Warden of the Coal Ports. Mr. Shann reminded those present that the Association's meetings were held in the members' free time in the evenings or on Saturday afternoons; at the same time they were most grateful for the help and encouragement extended by the four Boards from which the majority came. After a reference to the Association's great satisfaction with the honour of C.B.E. awarded to their Patron, Mr. Michael Milne-Watson, the President concluded with thanks to Mr. Hunter-Rioch, Mr. Winch, Mr. Woosencraft, and all of the Cambridge Division who had made such admirable arrangements.

Mr. J. Hunter-Rioch replied briefly for the guests.

The afternoon was spent in a 'personally conducted' tour of the Colleges and backs, all of which were enchanting in the unusual sunshine; and a most successful Ladies' Day concluded with tea in the Hall of Trinity College.

Mr. E. H. Winch (fifth from left) knows his Cambridge.

The President and Mrs. Shann; the Senior Vice-President and Mrs. Johnson.

INSTITUTION OF GAS ENGINEERS

London & Southern Section at *PORTSLADE*

IN fine weather, made seemingly finer by the squalls which had afflicted preceding days, the members and their ladies met at Portslade on June 17 for the Annual Summer Meeting.

After assembly, the ladies quickly shook the clinker grit from their dainty footwear, bid a feminine farewell to the Portslade Colossus, and departed in coaches to the hinterland of Brighton. There, in the Thomas-Stanford museum at Preston Manor, they savoured, for a brief hour, the preserved atmosphere of the reputedly more placid existence of an earlier generation.

The departure of the ladies left the men free to pursue the sterner pleasure of a conducted inspection of the new continuous retort installation at Portslade. The party was divided into conveniently small groups.

For all true gas men the next hour was one of absorbing interest. They moved through two-and-a-half million pounds-worth of modern gas equipment just beginning its warming-up period, and saw the kind of plant which will ultimately produce 15 mill. cu.ft. of gas per day. Cleanliness, the low noise-level, and the modern conveyor equipment drew appreciative comments from the visitors. Succinct was the comment of the man who, after contemplating the roaming of the bucket-cum-belt conveyor installation, said, 'The coal will certainly get pretty dizzy at Portslade.'

The morning session ended, husbands and wives renewed acquaintance by meeting at the Grand Hotel in Brighton where, after an excellent lunch, they heard the toast to the London and Southern Section of the Institution proposed by Mr. T. Brown, Member, South Eastern Gas Board, and replied to by Mr. C. R. M. Croft, Chairman of the Section.

In the course of his remarks Mr. Brown emphasised how fitting a climax to the year's proceedings was this visit to Portslade. Regarding the installation, he drew particular attention to the consideration which had been given to its aesthetic qualities. In the matter of the working conditions which henceforth would obtain at Portslade he, by comparison with the working conditions which used to exist, interpreted them as denoting *progress* in its widest possible sense. Mr. Brown went on to refer to the several papers which had been presented during the session and paid tribute to the authors of them.

Mr. C. R. M. Croft opened his reply to the toast by expressing to the Board the thanks of the guests for the day's hospitality. Continuing, he drew the attention of his audience, as had Mr. Brown, to the striking contrast between Portslade as it is now and Portslade as it used to be. He gave a brief, but none the less interesting, account of the events which led to the establishment of the first gas plant in Brighton—referring to the patronage afforded to the undertaking by the Prince Regent, and to the situation, by no means unique, in which residents wanted gas but *not* gasworks. Returning to contemporary matters, Mr. Croft made the point that at Portslade the engineers' responsibility would be to provide the gas, and that the onus for its disposal would rest completely on the personnel of the sales departments. The speaker concluded his reply to the toast with an expression of his deep appreciation of his own good fortune to have been the Chairman of the Section during this historic Coronation Year in which H.M. the Queen had conferred her patronage upon the industry, and H.R.H. the Duke of Edinburgh had become an Honorary Life Member of the Institution.

Following the lunch the guests took coaches to Arundel Castle. It must be recorded to the credit of the gas personnel who never relax their social service responsibilities that the transition was not entirely tranquil. It was interrupted spasmodically by interjections from various seats anent local distribution problems, with frequent references to 24-in. and 48-in. mains. The major interruption came from a lady who started a discussion on the theme 'The permeability of leather relative to purifier,' with the opening gambit, 'I can't stand the smell of that purifier Herbert brings into the house on his shoes.'

At Arundel the company spent a memorable afternoon, moving leisurely through the rich collection of historical treasure which successive holders of the property have assembled and defended during the past thousand years.

Back from Arundel to the finale of the official programme—tea at the Grand Hotel.

Then, cordial leave-taking, with sincere thanks to everybody who had contributed to what had undoubtedly been a thoroughly enjoyable and entertaining day.

Left to Right: Dr. J. Burns, North Thames; Mr. G. le B. Diamond, C.B.E., Chairman, West Midlands; Mr. E. G. Stewart and Mr. W. K. Tate, Southern.

Some of the group guides whose informative explanations of the working of the plant contributed so much to the success of the visit.

A group of members' ladies here seen before they left to spend the morning seeing the Thomas-Stanford museum at Preston Manor.

GAS COUNCIL INTRODUCES A New Coke Appliance Handbook

SUPPORTED by a small exhibition, the Gas Council introduced, at the Building Centre, London, on June 19, their *Coke-burning Appliances Handbook*, which has been compiled under the direction of the Coke Technical Committee. The Gas Council's object in producing the handbook was described by Colonel Sir Harold Smith, K.B.E., D.L., the Chairman of the Gas Council, in a short address. Their object, he said, was to publish a handbook illustrating coke-burning appliances which would be of real value not only to the staffs of area gas boards, but also to the wider sphere of local authorities, architects, builders, coke distributors and, indeed, to everyone concerned with the planning of fuel services and the choice of fuels and appliances.

Sir Harold went on to stress the important part played by coke in the national economy, as a means of conserving coal and of reducing atmospheric pollution. Turning to coke utilisation from the consumer's viewpoint, he said that the public was becoming increasingly aware of the great improvements that were being made in the design and efficiency of coke-burning appliances. The appliances catalogued in the handbook were representative of improved designs, and all of them were eminently suited to coke burning. Indeed, coke was pre-eminently the solid fuel which always should be used in these appliances for it gave the highest efficiency. Used in this way two-thirds of a ton of coke would do the work of one ton of coal. Householders benefited from the greater convenience and cleanliness of coke and also financially from its higher efficiency in use. In the London area, for instance, comparison between coal and coke for space heating gave striking results. The annual coal allocation to a household, under the present restrictions, was 34 cwt. With coal at 121s. 5d. a ton the annual cost would be 206s. 6d. If gas coke were used at its present cost of 119s. per ton, the householder would only need some 22 cwt. of coke which would cost him 131s. to get the same amount of heat as would be given by 34 cwt. of coal. In other words, his saving would be in the region of 75s. 6d. on his year's fuel bill.

Photographed at the launching of the new Handbook, here are Mr. Eric Bellingham, Director of the Coal Utilisation Council; Mr. Harold V. Shelton, Chairman of the British Ironfounders' Association; and Mr. Henry Jones, Deputy Chairman of the Gas Council.

Sir Harold recalled that the Ridley Committee had recommended the publication of 'A new and more informative list of efficient domestic solid fuel appliances'; he hoped that the new handbook was the answer to this recommendation.

Congratulating the Gas Council on the new publication, Mr. Harold V. Shelton, Chairman of the British Ironfounders' Association, described some of the events leading up to the present concentration of interest on this field of heating. He said that in 1946, following the report of the Simon Committee, at a time when it was thought that smokeless fuels would shortly be in more ample supply, manufacturers were urged by the Government to produce improved domestic appliances suitable for all fuels (coke, other smokeless fuels and bituminous coal). The industry's response had fortunately substantially contributed to the conservation of fuel generally. Moreover, in a period of limitation of supplies, those who had installed improved appliances had been able to use whatever type of fuel had been available and, in particular, consumer rather low quality small coal, for which it would otherwise have been difficult to find a suitable market.

Although he understood the production of all types of coke for domestic use was increasing there was, at the present time, only in the region of 5 mill. tons available and, therefore, the main domestic solid fuel load would for some years, have to be taken by bituminous coal.

He must not underestimate the difficulties in regard to the supply of suitable coke for the domestic market, but unfortunately, they knew only too well the quality in recent years had left a lot to be desired. He was encouraged by recent statements to learn of the steps that had been taken to increase the availability and, at the same time, improve the quality and sizing of coke. An extension in the use of smokeless fuels would be a contribution to the smoke abatement problem, but they must be realistic and appreciate that at the present time some 30 mill. tons of bituminous coal had to be consumed in the domestic market because of the limitation of supplies of coke and other smokeless fuels.

In his opinion, if a general movement was started to establish smokeless zones throughout the country, there would be neither sufficient quantities of smokeless fuel nor appliances capable of burning bituminous coal smokelessly.

He suggested local authorities should accept initially a less stringent standard than the absolute smokelessness required under the present Corporation Acts. A progressive programme should be adopted for the installation in existing houses of efficient and cleaner appliances which were now available. This would secure an ever increasing measure of smoke reduction over the country as a whole and would be a much more practical contribution to the problem of smoke abatement than the piecemeal introduction of a number of isolated smokeless zones with all their attendant difficulties of fuel supply.

The new handbook (which is available from area boards or from the Gas Council Coke Department, price 12s. 6d.) goes further than any previous book in its details of types of appliances and advice on methods of selection and installation. Illustrated with photographs and diagrams, the book is divided into sections according to types of appliances. Each section is preceded by introductory notes, and reference is made to the relevant British Standard Specifications and British Standard Codes of Practice. A price guide to the appliances is contained in the slip-pocket at the end of the book. Production is of a high order and the book is stoutly bound to give it a long life.

Smoke Abatement

EVERYONE who is interested in any way in smoke abatement and the problems of air pollution—and since the London fog disaster of December last their numbers have grown considerably—will find the *Year Book, 1953*, of the National Smoke Abatement Society an essential source of reference and up-to-date information. Not only does it include information about the Society itself, and its activities, but it gives factual notes on such matters as the law relating to smoke, the measurement of pollution, and the work of various Government departments. There are also extracts on smoke abatement policy from the Simon and Ridley reports, a summary of the facts about the December fog, a handy directory of organisations, a bibliography of recent papers and reports, and a list of over 50 publications on the subject that are available. A perusal of the publication reveals the wide range of questions covered by the familiar phrase 'smoke abatement,' and shows with what detail the Society is tackling its important task. The *Year Book* can be obtained from the Society at Chandos House, Buckingham Gate, London, S.W.1, and costs 1s. (by post, 1s. 2d.).

Recoverable Reserves of coking coal in seams over 2 ft. 4 in. thick in Wyoming County, W. Va., are estimated at more than 1,000 mill. tons, in a U.S. Bureau of Mines report of investigations. The report is the 12th in a series giving results of a county-by-county inventory of known minable coking coal reserves in the United States, begun by the bureau in 1948 at the request of the Munitions Board.

NATURAL GAS IN GREAT BR

A Unitised Drilling Rig at Eakring

AT the annual meeting of the Institution of Gas Engineers an important announcement was made by Colonel Sir Harold Smith, Chairman of the Gas Council. Sir Harold explained that the Gas Council had decided to consider the possibility of finding natural gas in this country said that it had been fortunate in engaging the help of Dr. G. M. Lees, F.R.S., Chief Geologist to the Anglo-Iranian Oil Company. Sir Harold went on to say: Dr. Lees' advice is sufficiently encouraging to have caused the Gas Council to express its willingness to conduct a large scale exploration for natural gas, and discussions are proceeding with the Chairman and directors of the Anglo-Iranian Oil Company with a view to arrangements being made for this exploration to begin. I should like to acknowledge here the help and encouragement we have received from the Chairman and directors and officials of the Anglo-Iranian Oil Company whom we have found most willing to join with us in searching for natural gas, a project which we all feel is in the national interest.

'There is, of course, no guarantee that gas will be found in any commercial quantity, but it is important to remember that so far when borings have been made these have been made with the object of finding oil, no serious attempt having been made to look for natural gas. It is interesting to note that gas may possibly be found separately from oil. We consider ourselves very fortunate in being able to benefit by the expert advice of the Anglo-Iranian Oil Company, who have all the "know-how" which is so necessary when embarking on an experiment of this kind. It is anticipated that the exploration which we propose to make will be spread over about five years. What the result will be, of course, none of us can yet say. If we are successful the benefits accruing to the consumers of gas may well be considerable. If we are not, at any rate we shall have the satisfaction of knowing that we have not neglected to take advantage of an opportunity of trying to find new supplies of gas. The one thing that is certain is that if we do not seek we shall not find.'

We thought it would interest our readers to have the background, in outline, of the exploration for oil in Great Britain, and this we are able to set out here through the courtesy of Dr. Lees.

During the 1914-18 war a number of wells were drilled on the folds flanking the Pennine Uplift. The results were disappointing, though a small well was discovered at Hardstoft in Derbyshire and a single test well in Scotland gave encouraging signs of oil and gas. After the war the exploration came to a close, but following the Petroleum Production

Dr. G. M. Lees, F.R.S., Chief Geologist to the Anglo-Iranian Oil Company. Dr. Lees' advice, says Colonel Sir Harold Smith, Chairman of the Gas Council, is sufficiently encouraging to have caused the Council to conduct a large scale exploration for natural gas in this country in association with Anglo-Iranian. Discussions are now proceeding.

Act of 1934, the Anglo-Iranian Co., working through its subsidiary, the D'Arcy Exploration Co., Ltd., launched a major drilling programme, the first well being spudded in at Portsdown in 1936. Other companies, the Anglo-American Oil Co., Gulf Exploration, and Steel Bros. later joined in the search and drilled a number of wells, but the D'Arcy Exploration Co. maintained a lead in its geological investigations, and, in fact, achieved the first major success by discovering the Eakring oilfield on the flanks of the Pennine Uplift.

Following trials in Dorset, Hampshire, Sussex, and Wiltshire, the D'Arcy Exploration Co., tested the possibilities of gas and oil by drilling a 5,040 ft. well at Eskdale. This hole gave a gas production of nearly pure methane at 2.5 mill. cu.ft. per day. Up to the present this has not been used, but remains available. At about the same time, late in 1937, examination of the D'Arcy-Cousland Anticline, near Dalkeith, S.E. Edin-

...BRITAIN

burgh, began in the hope of finding commercial oil accumulations. Gas was proved at the Cousland end of the structure with minor quantities of oil. Further testing, after a wartime interruption, failed to find any substantial gas production in the well drilled and detracted from the production prospects of the area. Arrangements are under discussion for utilising the gas reserves proved by the earlier wells.

In the Eakring area well spacing was originally planned at 500 ft. between wells, but, to get maximum production during the last war, infilling wells were drilled giving an overall spacing of one well to 2½ acres in the Eakring field and one well to 3 acres in the Kelham and Caunton fields. Initial well productions varied from about one ton to an exceptional 50 tons per day, the average being about 8 tons per day.

The original reservoir pressure in the Eakring field was approximately 990 lb. per sq. in. at a datum level of 1,700 ft. below mean sea level, the highest recorded surface closed-in pressure being 300 lb. per sq. in. The original saturation pressure of the gas in the crude in the Eakring field was 390 lb. per sq. in. With production there was a fairly rapid fall in pressure to saturation pressure in the various sands and fields, with a consequent decrease in production. This decrease was compensated to some extent by shooting and to repressurising the reservoir sands by the injection of water.

By well shooting the sustained production capacity of individual wells has on the average been more than doubled. Polar blasting gelatine is used, being exploded by time bombs.

The effect of water injection at Eakring was not immediate, except in the case of a few wells. Injection was started towards the end of 1947. By November, 1948, however, oil production of the Eakring field had increased to 43 tons a day from a production of 28 tons a day just prior to the effect of the water drive making itself felt. This higher rate of production has been maintained, but what is more important, marginal wells, which since the water injection started have produced as much as 10 years production at the pre-injection rate, are still producing several times as much oil as formerly. Hence confidence that the ultimate production of the field will be substantially increased by water injection.

In the south of England, though the earlier tests did not find commercial oil, there remain spectacular exposures of oil sands along the Dorset coast and near Pevensey, in Sussex. There are possibilities of oil —and with it natural gas—over a wide area in south central England north of a line through the Mendips and Guildford. On the north-east coast, at Eskdale, the gas is well capable of being used. At Cousland the gas discoveries, though small, await development. The search for oil and natural gas in Great Britain is by no means over.

The following table shows production of crude oil and gasoline in the United Kingdom in 1949 (it must be remembered that after the last war the scale of the Anglo-Iranian Co.'s activities in this sphere was reduced) and the total oil and gasoline production in the fields mentioned during the years 1938-49.

Field	1949 tons	Total, 1938-49 tons
Hardstoft	—	1,235
Eakring	15,754	171,006
Duke's Wood	20,298	272,337
Kelham Hills	7,772	126,406
Caunton	1,327	22,472
Formby (Lancs.)	268	8,053
Nocton	—	44
Totals	45,419	601,553

...n Oil Well in Typical Surroundings.

A Winter Scene at Eakring.

LEADERS OF THE INDUSTRY: TASKS AND QUALIFICATIONS

By C. R. M. CROFT, B.A., A.M.I.C.E., A.M.I.Mech.E., M.Inst.Gas E.,
General Manager, Sussex Division, South Eastern Gas Board

From Chairman's Address to the London and Southern Section of the Institution of Gas Engineers

IT is four years since the industry commenced operating in its reconstituted form as laid down by the Gas Act, 1948. We came into being as a State-owned industry in an atmosphere of acute political controversy which was raging throughout the country as to the merits or demerits of nationalisation. This was at times bewildering to those of us who had made the industry our life, and knew that we should have to continue to do the best we could to ensure its continued healthy existence. In point of fact, speaking within my knowledge, the changeover was really comparatively smooth; I think because those called upon to carry it out—and here I mean everyone from top to bottom—put the industry first and thrust politics into the background. This state of affairs was fundamentally influenced by the inherent pride of all in the service that gas has always given to the public, and the interest in the welfare of all employed within the industry which has been the feature of our existence throughout our history.

Weathering the Storm

It was inevitable, however, that public opinion was not so impartial in expressing its views, but I think we are weathering that storm possibly better than was at first expected. I would, however, like to stress how much we must rely on public opinion of our activities, in order to formulate a sound policy on which to base the running of our affairs, provided such opinion is genuine, and uninspired by considerations other than the service we are giving. There is, however, no room for politics in the day to day running of any big industry. To say that because an industry is run under private enterprise it is wrong in principle, is equally unjust as to say that because it is nationalised it must be wrong. The criterion in either circumstance must be the service given to the customer.

There is at the present time a tendency for some sections of the community to group all State-owned industries into one vast unit known as 'the nationalised industries,' and to suggest that a panacea to cure all troubles can be achieved by the setting up of a committee charged to carry out an investigation, no doubt on a global basis, and make recommendations regarding re-organisation. A fundamental error in this line of thought would appear to be that each of the industries concerned is operating under entirely different circumstances and each operates under a separate Act of Parliament, aimed at meeting the particular circumstances of the industry concerned. Conditions vary according to geography even within a single industry. The real success of an industry must rest with its internal management, and be adjudged by the results it produces, and while we are all used to being told when these results do not meet with public favour, it would be nice to think that occasionally we heard when we did do a good job.

Best of the Lot

I consider that the Gas Act is the best of the lot, and no doubt benefited from the lengthy and detailed discussion which took place when it was passing through the committee stage, and the close liaison maintained between the Ministry of Fuel and Power and the leaders of the industry prior to vesting date.

Running our business under an Act of Parliament is bound to be different in some respects from the circumstances we knew before. Instead of having a responsibility to shareholders we have one to the nation whose representatives are the Members of Parliament. We strive to please them by giving the service expected of us, and this means looking after the customer from whom we expect to hear direct or through the machinery of consultative councils.

The industry is now largely manned by people brought up in it prior to the new order of things. They, however, are bound to grow older—no act of man can alter this—and there is an urgent necessity for a new intake to carry on the business of the future. We are nationalised and will stay that way in some form or other, and even if the word 'nationalised' cannot yet be a universal incentive for recruitment, let it not be a deterrent by conjuring up in the eyes of the young men and women seeking a career a vision of a business doomed to be a political shuttlecock. The responsibility for dispelling this idea rests very much on those in it, for by our enthusiasm in fulfilling our duties will the industry which we have chosen to continue serving be judged.

Need for Specialists

Following these thoughts I would like to turn to the consideration of the type of people, in very general terms, whom it is necessary to recruit, and it would seem that they fall under three principal headings:—

(i) Those with technical training—engineers, chemists, etc.—to ensure the efficient development and running of our production and distribution plant.
(ii) People trained in commercial aspects of our business to market the results of the former's efforts.
(iii) Accountants to build up the financial picture, and keep the operational departments informed as to the individual contribution that each is making.

Within each of these categories there is a great need for specialists, but it is equally important that as departments they do not pursue an isolationist policy. There has within the Board I serve, and doubtless in others, been a striking development of this inter-departmental team spirit. There is now a real understanding between all concerned of the other man's problem, and a keen enthusiasm to help each other in achieving success in our endeavours.

If I might dare to say so, this is indeed a change from the time when those responsible for the engineering and commercial activities looked upon the accountant as a menace, who took a fiendish delight in advising a board of directors or a corporation committee that their pet schemes were an extravagance that could not be countenanced, and the accountant in turn looked on all others as rogues—likeable rogues perhaps—who spent their time scheming to spend the monies that had been collected from an unwilling public who he thought were not paying enough in any case to support his colleagues in their grandiose ideas. This may be an exaggerated picture, but it is inspired by more than a particle of truth, and I think it is better when all work together, appreciating each other's problems, and doing everything possible to help in finding the proper solution. Within the more limited field of our own constitution as a section of the Institution of Gas Engineers, I think it is significant that one who was trained as an engineer can with sincerity and

without fear, group as one category 'men of technical training, engineers, and chemists.' It was not always so.

People with Trained Minds

For our new intake, therefore, we need people whose minds have been trained in an orderly manner under these three main headings, and we must have both immediate and long-term prospects to offer. People in each category will have started with a specialist's training and outlook, and must become master of the basic principles of their chosen calling. As progress is made in achieving this, however, there should be a steady broadening of individual outlook leading to an appreciation of the nature and value of the other man's job, and an understanding of how to use the services made available. An essential background, however, to this recruiting campaign is that our own house be set in order, so that we know what we need; what we can offer to obtain it; and where it will lead the newcomer who applies himself to his task. Under these circumstances we can make our need known to the world and expect to attract the people we want.

I think good progress is being made in this direction, and, after all, four years is a short time in which to formulate such ideas in the wake of a really tremendous job of amalgamation of units of all sizes. But equally four years is a long time during which the intake of academically qualified people has been at a very low ebb, and any extension of that period is bound to lead to a large gap in the future.

We have now touched on what I feel are the three main departments whose staff contribute in a major way to the operational success of the industry, and it is, of course, essential that there be someone at the head of each to see that the efforts of the staff concerned are properly applied. Whether the policy be that these departments are highly centralised or working under varying degrees of de-centralisation, does not, I think, affect in any major way the fundamental qualifications necessary for the man at the top.

In the case of the engineering side of our business, the staff is likely to comprise engineers (be they civil, mechanical or gas) and chemists. When referring to this wide range of engineering, I feel constrained to remark on the greatly increased scope of mechanical engineering in the gas industry. Machinery is being installed in ever increasing degree for the handling of materials, and the time is approaching when the process engineer will rely more and more on sound mechanical knowledge being available within the factory to ensure continuity of manufacture.

Free from Prejudice

I see no reason why the senior officer should not be drawn from any of these potential sources, but it is, of course, imperative that he remains free from prejudice, and is prepared to listen to his experts in all other branches, and be advised by their specialist knowledge. His responsibility is fitting together the pieces of the jig-saw provided by these experts, and formulating a line of action which will result in the maximum efficiency in the use of the materials at his command. In coming to this final decision he will almost certainly have to consult his opposite number in the accounts department, and in many instances the advice of his commercial colleagues will be invaluable, as they are the retailers of his main products. In most cases he will find that his final decision is a compromise, not perhaps a word of happy association, but one which I firmly believe does not necessarily indicate weakness, but rather a commonsense balance of the many factors involved.

I am somewhat diffident in expressing views on the management of commercial affairs, since although I have for many years taken a very active and keen interest in this side of our business, I am still conscious of the fact that my primary training is that of an engineer, and engineers—by nature being somewhat matter of fact and conservative in their outlook—are not always thought to possess those sensitive qualities necessary to appreciate the public temperament.

It would appear that the primary tasks of the leader of a commercial team are to know what the public wants, and to try and provide it; or, if this be not possible, to impress on them that what you have to offer is better than that for which they are asking. As the success of a commercial department is largely governed by the efficiency of the office system operating behind the outside selling and fitting staff, I think a sound understanding of office administration, with its manifold ramifications, is of primary importance. It is of little avail to run a successful selling campaign if the collection of the money accruing and the appliance installation and maintenance work are not organised on highly efficient lines. I think many people would be shocked if they saw how much these latter activities cost in some circumstances.

In broad terms the necessity seems to be to have a man at the top with a mind trained to study detail, whose qualifications may have a background of accountancy, salesmanship or, I would even say, an engineer or a lawyer, the same important proviso that I have mentioned before still applying that, whichever he is, he must be prepared to accept advice from others and inspire enthusiasm among his clerical, selling and fitting staff.

Leader of Accountancy Team

We now come to the leader of the accountancy team, and here undoubtedly the need is for a specialist officer qualified in his own profession. Personality, however, counts for a tremendous amount in the successful running of his business by an accountant. He is in a position where many of his colleagues will have a very limited understanding of the details of his activities, but do recognise the tremendous importance to them of the results he achieves. It is of fundamental importance, therefore, that whatever method he has to use in order to fulfil his own obligations, he must be able to extract and present figures and facts in a form which can be understood by those who are providing him with the material on which he works. I am pleased to say that I have among my friends, both personal and professional, quite a few accountants, not all of whom are in the gas industry. What is of interest, however, is that, without exception, but perhaps in different words, they all emphasise the fact that they are a service department existing, not only to collect the results of other people's work and interpret them in terms of £. s. d., but to provide information for which they have been asked by the operating departments, or which in turn they think will be helpful for the better running of the section concerned. The accountant's job cannot be a happy one in these days, as, under present conditions, he is more likely to be coming along with a sad story and harassed look than to meet his colleagues and say everything is going jolly well.

Having talked about these three main headings, I would like to add one further thought which I think is of great importance, and can be broadly summarised in the somewhat hackneyed expression of 'delegation of responsibility.'

Responsibility to the Boss

Any head of a department must, of course, be responsible in turn to his boss for the proper running of his affairs, but he in turn must recognise that he is very much in the hands of those working for him, and it does strike me as being essential that as far as possible all concerned should have a very good idea of why they are being asked to do a thing, and what contribution it is making to the overall success of the organisation. If this is done, it can develop a sense of responsibility and enthusiasm and a feeling of 'I am doing a job worth while and I know why I am doing it,' which spirit forms an excellent, if not essential, foundation for any organisation.

We have got to sell our products if we are to live. This means that the price has got to be right, and it is towards the aim of providing the cheapest possible gas that all our efforts are directed. Tremendous efforts have been, and continue to be, made towards efficiency and the whittling down of all unnecessary expenditure. I think on the manufacturing side we can say that there is a

general improvement in efficiency of plant operation, which is only to be expected as a result of the much wider availability, under present circumstances, of existing technical knowledge to the smaller production units. This has been of immediate assistance. Long-term planning is directed towards the development of economically sited gas-making stations followed by the linking up with, and subsequent closing down of, smaller and more expensive works.

There are already many examples of economies and improved efficiency in administration by the introduction throughout a wider sphere of systems that have been proved by big company practice prior to vesting date. On the district side this would appear to take the form of reasonable absorption or centralisation of office and service activities with a consequent saving of man power.

In considering re-organisation it is important to ensure that the system improves efficiency and suits the circumstances. There are occasions when the reverse can be the result, in so far as no economy in man power is gained and the job suffers through having to be adapted to suit a system.

As a background to all this striving to produce the cheapest possible article, the successful efforts that have been made by my own Board to develop an acute cost consciousness throughout the organisation are of great importance. The preceding remarks really apply to considerations over which some control can be exercised by management. The tragedy—and I do not think this is too strong a word—is that all collective and individual effort in this field is from time to time set at nought by the impact of tremendous rising costs over which we have no control, our essential raw material—coal—being the greatest contributor to these circumstances.

As a result of the experience of all of us, we know the effort necessary to effect economies that can be shown in terms of a fraction of a penny, and the months of hard work and headaches necessary for their achievement, but almost overnight coal prices impose an increase in many instances equivalent to a penny plus in the cost per therm.

Wage increases are another major factor in our internal economy, but claims in this direction are usually based on increases in the cost of living, and as this item must of necessity be linked with the economic structure of the country, which to a very large extent is based on coal, we come back to the same fundamental problem.

We think about cutting down expenditure, but may I be forgiven for suggesting that it may now be necessary to spend more money in order to earn more, bearing in mind that an increase in our net revenue is immediately as good as an equivalent economy, but in the long run is much sounder and, in fact, essential if we are to maintain a healthy and developing industry.

Automatic Control of Gas Producers

THE importance which is nowadays being attached to deriving the optimum performance from a gas producer has emphasised the need for applying automatic control to this process. Such automatic control is particularly desirable in producers subjected to considerable load variations, such as those associated with open-hearth furnaces in unit installations, under which circumstances manual control would be unable to avert large fluctuations in the quality of the gas produced. In any type of installation, however, the application of automatic control will result in considerable improvement over the conditions prevailing with average manual control.

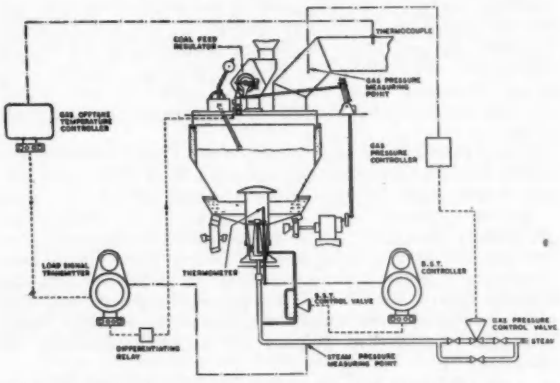
A fully automatic control scheme applied to a gas producer will regulate the input of the three constituents of the process—namely air, steam, and solid fuel. Automatic control of gas offtake pressure and blast saturation temperature regulates the first two of these in their respective control circuits which have been employed in many undertakings as standard producer practice for some time. The advantages which are respectively produced from these circuits are the ability to meet load demands of the associated plant, and the provision of the optimum proportion of steam in the blast.

Automatic regulation of the coal feed with the ultimate aim of attaining a steady gas quality can best be effected by employing the related condition of gas temperature as a criterion of such quality and as the control condition in the control circuit. Although past attempts at control of gas offtake temperature have met with considerable technical problems, these difficulties have been overcome in joint development work carried out by George Kent, Ltd., and the British Coal Utilisation Research Association; and a complete gas-producer control scheme is now being offered by George Kent, Ltd.

In this scheme, automatic regulation of the coal feed is carried out by means of a coal feed regulator, actuated by a combined control signal which is based partly on a measurement of producer load and partly on the deviation of gas offtake temperature from its desired value. In addition, the full scheme includes control circuits providing for the control of gas offtake pressure and blast saturation temperature.

The ultimate advantage of this application of automatic control to the coal feed is that a gas of higher and more consistent quality is obtained than could be produced with manual control. This increase in quality is effected by enabling the producer to be operated with a deeper fuel bed, since the danger of tar deposition in the gas mains due to falls in gas temperature is averted. The advantage of the Kent scheme for the automatic control of gas temperature is that a good control can be obtained which on the one hand does not interfere with the physical and chemical requirements relating to the fuel bed, and which on the other is not itself adversely affected by fuel bed conditions such as the presence of flares.

The complete control scheme as applied to one type of gas producer, equipped with a steam jet blast injector, is as follows:



Diagrammatic lay-out of Kent automatic-control scheme for gas producers. Key:-

——·——·—— measurement connections.
- - - - - - - - - - control circuit connections.

This scheme may be modified to suit certain other similar types of producer.

(1) *Gas Offtake Pressure Control.*—The gas pressure is detected in the gas offtake duct and is measured by means of a low-range pressure meter containing a two-term pneumatic controller, the control signal of which is fed to a diaphragm-operated control valve situated in the steam main to the blast injector.

(2) *Blast Saturation Temperature Control.*—The temperature of the blast is detected by means of a mercury-in-steel thermometer situated beneath the blast hood and is measured by a temperature recorder containing a proportional pneumatic controller, the control signal of which is fed to a diaphragm-operated control valve situated in the steam by-pass round the blast injector.

(3) *Gas Offtake Temperature Control.*—The gas temperature is detected by a thermocouple situated in the gas offtake duct, and is measured by a potentiometric temperature recorder containing a three-term pneumatic controller, the output signal of which is added to that generated by a load signal transmitter. The latter is a pneumatic unit installed in a steam meter which measures the pressure of the steam at the inlet to the blast injector of the producer. The combined control signal is fed through a differentiating relay to a standard Kent power cylinder, which positions the coal feed regulator, thereby regulating the rate of coal feed to the producer.

Gasworks Liquors

By J. J. PRIESTLEY, M.Sc.,
W. C. Holmes & Co., Ltd.

THE British gas industry consumes approximately 25 mill. tons of coal per year, producing up to 50 gal. of aqueous effluent per ton of coal carbonised. The maximum daily production of effluent liquor is, therefore, about 6¼ mill. gal. Because the industry is growing, this volume becomes greater each year. Two other important facts should be noted. Firstly, as new gasworks replace old, more modern types of coal carbonising plants are installed. As a general rule, the exception being coke oven plants, these newer types not only make more effluent liquor per ton of coal carbonised, but the effluent itself is more toxic. Secondly, the pattern of the industry is changing in that gas-making is carried out at fewer but larger works. This means that, although the effluent problem ceases to exist in some localities, it is intensified in others. Frequently the new and centralised works are remotely placed from the cities and towns they are intended to serve, and the balance between domestic and gasworks effluent is upset.

The commonest method of disposing of effluent liquor has been and still is into rivers or sewers, but restrictive legislation, including the Gas Act, 1948, itself, has recently forced the industry to become very effluent conscious. It is slowly being recognised that satisfactory effluent treatment, whether at the gasworks or at the sewage works, is part of the gas-making process as a whole and that the cost of any such treatment is one of the normal costs of gas production.

Nature and Composition of Effluent

Apart from those wastes normally produced in a large works, such as discharges from steam boilers, engine condensers, and water softening plants, the great bulk of gasworks effluent is produced as a result of the coal carbonisation process itself and the subsequent purification of the crude gas. Hot gas leaving the retorts is cooled to atmospheric temperatures and as a consequence an aqueous condensate is obtained. The water is derived from:

(1) The moisture in the coal used.
(2) The oxygen in the coal substance by reaction with hydrogen.
(3) Undecomposed steam, in the case of steamed retorts and chambers.

To this must be added water normally employed for removing ammonia from the crude gas and that produced by the oxidation of hydrogen sulphide during purification. The composition of gas liquor (as it is known) varies within fairly wide limits. In short it is a solution of ammonium salts together with some organic bodies, mainly phenolic. In the industry the ammonium salts are usually divided into two groups, known as 'free" and 'fixed.' The 'free' salts are those decomposed by boiling and include sulphide, hydrosulphide, carbonate, bicarbonate, and cyanide. The 'fixed' salts which are unaffected by boiling are chloride, thiocyanate, and thiosulphate, together with traces of others. The organic bodies include phenol and cresols, which are the most important; catechol, resorcinol, and their homologues. Other acidic bodies are known, such as carboxylic and 'humic' acids, and it is extremely likely that there are complex unsaturated bodies present as well. Complex polycyclic hydrocarbons are known to be present, but in minute quantities. The oxygen absorption value may vary between 10,000 and 17,000 parts per million.

The polluting effect of gasworks effluent is twofold. Firstly, some constituents, notably cyanides, have a direct toxic effect, while others produce toxic substances during decomposition. Secondly other constituents cause a serious reduction in the dissolved oxygen content of the river water, because they are biochemically oxidised at the expense of that oxygen. Such a depletion is dangerous to fish life and renders rivers foul and objectionable.

With one notable exception (at Tingley, to which reference will be made later) no gasworks in this country achieves finality in the treatment of its effluent. This does not mean that the industry has been insensitive to the problem, which is acknowledged to be very difficult. Research work was begun in 1926 by the Institution of Gas Engineers and much valuable information has ben collected, mainly aimed at improving the quality of effluents. Hence most of the processes employed in gasworks today aim only at the improvement of liquors, such liquors being generally discharged into sewers. Some effluents are still being discharged into rivers. this being permitted only as a matter of absolute necessity, a practice rapidly being curtailed by the river boards.

It will be noted therefore that at present effluent liquor disposal is closely associated with sewage purification. The same biochemical oxidation which has such disastrous results in rivers is carried out at the sewage works in a more effective manner.

The decision as to what constitutes an improvement of an effluent liquor is difficult because little is known about the effect of the different constituents of gas liquor on sewage purification. The pioneer work of Kay (1) before the war, has recently (1951) been carried further by Blackburn, Tomlinson, and Summers (2). An entirely fresh approach to the problem, based on new techniques has been made by Wedgwood (3). The work of Kay suggested that the constituents most resistant to biochemical oxidation were free ammonia, higher tar acids and thiocyanate. The more recent work confirms the deleterious effect of ammonia and thiocyanate together with some unknown organic substances insoluble in methyl isobutyl ketone. A newly isolated group, carboxylic and humic acids, were very similar in behaviour. Polyhydric phenols (formerly higher tar acids) were not significantly different from monohydric phenols in their effect.

The conclusions as to the effect of these constituents were drawn from difference figures in O/A (oxygen absorption) and B.O.D. (biochemical oxygen demand) tests. Wedgwood (3) considers this a weakness, suggesting that an inhibiting effect of some of the constituents rather than their own resistance to oxidation may be the correct explanation.

The hard practical fact remains, however, that the average sewage works can accept little more than 0.3% of the dry weather sewage flow of crude liquor, or about 0.4% of liquor stripped of free ammonia and sulphide. Tar must of course be rigorously excluded and the flow of liquor carefully regulated.

Improvement of Liquors at Gasworks

Concrete evidence of the effect on full scale sewage works operation of a reduction of the oxygen absorption value of ammonia-free liquors by pre-treatment is scarce. The recent work of Clifford and Rees (4) showed that dephenolation at the Swan Village gasworks was beneficial in that the liquor dosage to the filters could be increased from 0.28% to 0.41% (an increase of 47%) without much alteration to the final sewage effluent. Now it is known that phenols are relatively easy to oxidise biochemically; therefore it is reasonable to assume, in the absence of direct experimental evidence, that if the removal of phenols is beneficial, the removal or reduction of the more intractable constituents would be even better.

Pre-treatment at the gasworks has a particular value in the case of an undertaking with an expanding output of gas but which is limited in the amount of oxygen obsorption load of the effluent liquor sent to the local sewage works.

Methods available for reduction of the toxic load have been detailed elsewhere, (1), (5), (6), (7), but may briefly be summarised here. The first group are measures adopted to improve liquors during production.

(I) Electrodetarring of the hot crude gas leaving the retorts, although increasing the monohydric phenols in the liquor subsequently condensed, reduces considerably the more undesirable acidic bodies (humic acids according to Blackburn, otherwise classified as higher tar acids). Segregation of the hot retort house liquor is also to be recommended.

(II) Separate storage of tar and liquor.

(III) Careful control of purification technique (ammonia and hydrogen sulphide) to minimise thiosulphate and thiocyanate formation.

Next are methods intended to reduce the polluting effect of the liquor already produced.

(i) By far the most important, and a method widely used in the industry, is the removal of free ammonia by steam distillation of the crude liquor and the production of a concentrated ammonia liquor for sale. During distillation not only the free ammonia but sulphide, cyanide and a proportion of monohydric phenols are removed as well.

(ii) Dephenolation by solvent extraction with benzole, tar oils, butyl acetate, or methyl-iso-butyl-ketone. These processes are usually worked in conjunction with ammonia removal.

(iii) A new process recently described by Cooper and Bouch (8) aims at the complete destruction of thiosulphate and thiocyanate, preferably in liquors stripped of free ammonia and phenols. This has been taken to pilot plant stage.

At the new gasworks at Tingley, near Leeds, previously mentioned, a full scale effluent plant has been installed based on a scheme suggested by Nicklin (9) which aims at the complete disposal of the liquor, with the production of saleable commodities and a clean water. This plant was a necessary adjunct of the new works which is situated in a semi-rural area.

Conclusion

As a consequence of intensive research by various groups, a great deal is known about the treatment of gasworks effluents but much remains to be done. The ideal of complete disposal at the gasworks itself can be achieved, but whether the capital expenditure to achieve this on a national scale can be justified is a matter of conjecture. Whatever the answer may be there must of necessity be concert between the gas and sewage engineers and any existing co-operation encouraged.

References

1. 'Gasworks Effluents and Ammonia." A. Key. Inst. Gas E. Comm. No. 188 (1938).
2. 'The Treatment of Gasworks Liquor in Admixture with Sewage in Percolating Filters,' W. H. Blackburn, T. G. Tomlinson, and T. H. Summers. Gas Research Board Comm. No. 63 (1951).
3. 'The Nature or Composition of Sewage and Trade Effluents,' P. Wedgwood. Paper read to Metropolitan and Southern Branch, Institute of Sewage Purification, February, 1953.
4. 'Further Experimental Work on Gas Liquor Treatment,' A. J. Clifford and J. T. Rees. Paper read in Birmingham to a joint meeting, Midland Sections, Institution of Gas Engineers and Institute of Sewage Purification, February, 1953.
5. 'A Survey of the Liquor Disposal Problem,' E. H. M. Badger, Trans. Inst. Gas E. **99**, 222 (1949).
6. 'The Treatment of Effluent Liquors from Gasworks,' J. J. Priestley, *Gas J.* **260**, 532, 594, 659 (1949).
7. 'Some Thoughts on the Treatment and Disposal of Gasworks Effluents.' A. Marsden, *Gas J.* **267**, 234, 285 (1951).
8. 'Investigations into a new method of Effluent Liquor Purification.' C. Cooper and W. E. Bouch, Inst.Gas E. Comm. No. 399 (1951).
9. 'The Treatment of Gasworks Effluent.' T. Nicklin. Proc. Brit. Jun. Gas Assns. **31**, 279 (1948-49).

UNIT COSTING

DESPITE the wide scope for unit costing in local government there are financial officers who look upon unit costs as merely a collection of impressive statistics, the value of which is more theoretical than real. Much the same might be said of some of the financial officers of the gas industry before it was nationalised, but with the creation of the area boards and the standardisation of accounting systems the importance of unit costing has been fully recognised. As the latest of the series of research studies sponsored by its Research Committee, the Institute of Municipal Treasurers and Accountants has just published *A Survey of Unit Costing in Local Government* by Sydney Yates and R. E. Herbert. The study is designed to fill the gap in present-day literature on unit costing and especially unit costing as practised by local authorities. The authors have made detailed investigations into the systems at present operated and begin by setting out general principles which are common to all unit costing. They then go on to examine the application of unit costs to the individual services. Separate chapters are devoted to education, residential, health, sewage, and cleansing, highways, housing and transport, and miscellaneous services.

The authors state in their introduction: 'We have had two objects in mind: first, to review the present practice and summarise the merits and limitations of unit costs generally; and, secondly, to provide a reference book wherein anyone interested in a particular service may find guidance as to its suitability for unit costing and an outline of the practical considerations that should be borne in mind. It is apparent, however, from the information collected, that some of the services warrant a more detailed examination and this would be a logical development from the general to the particular; but a general survey was a necessary first step.'

The authors in their conclusion express the opinion that many of the difficulties and disadvantages quoted against unit costing are greatly exaggerated. This especially applies to the differences caused by local circumstances, which are an excuse frequently given when the unit costs of a local authority compare unfavourably with those of others. The book is topical at a time when the advantages and disadvantages of unit costs are the subject of debate, and copies may be obtained, price 20s. each, from the offices of the Institute at 1, Buckingham Place, London, S.W.1.

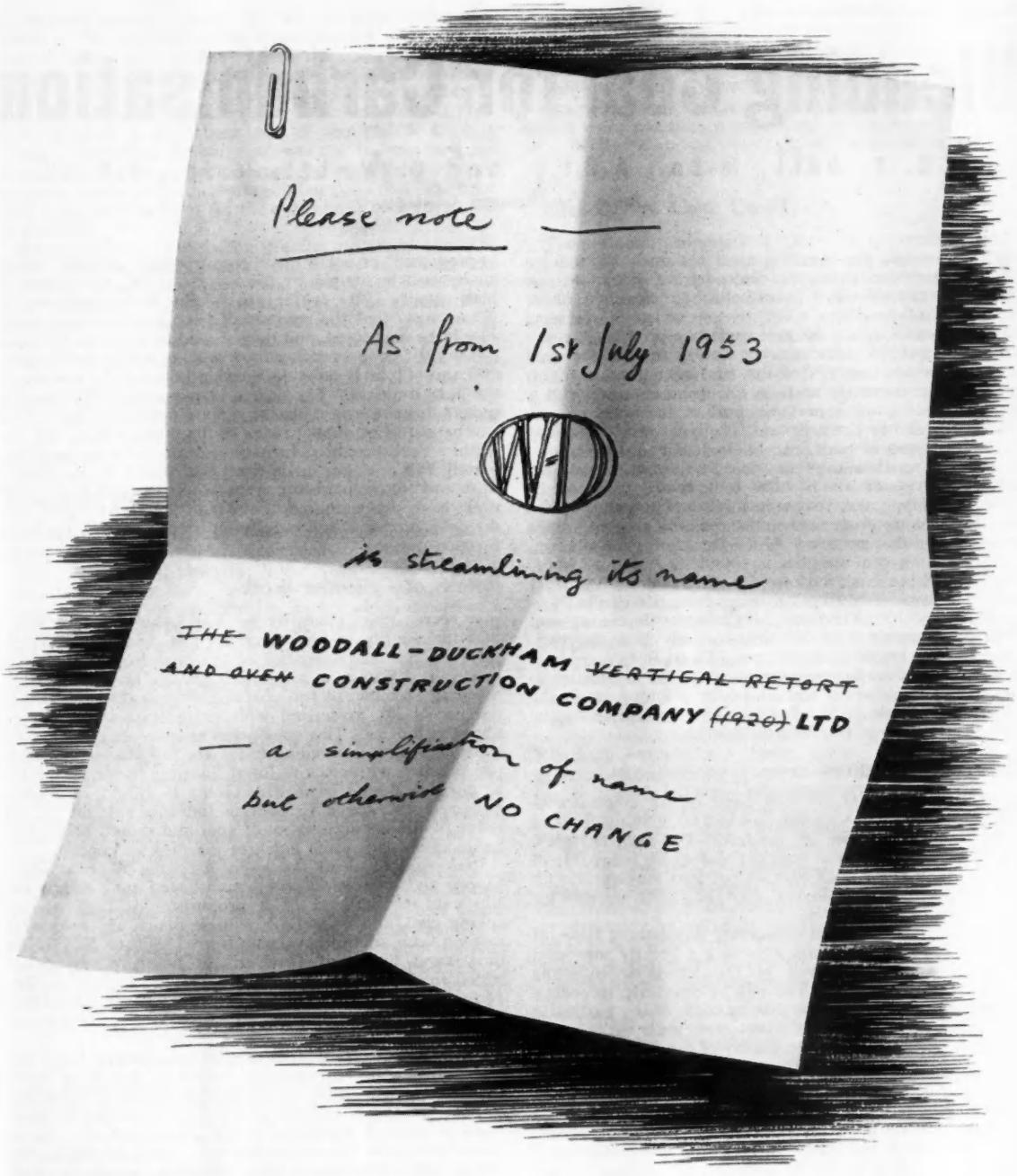
CENSUS OF PRODUCTION

AN ORDER indicating the scope of the census of production to be taken in 1954 for the year 1953 has been made by the Board of Trade. Sampling methods which were introduced for the census of 1952 for the first time will again be used, and the census form will accordingly contain few questions. The decision to take a simplified sample census for the second year in succession will again represent a substantial reduction of the burden on industry. It will also permit the greatest possible economy in the census of production office at the Board of Trade.

The census will cover all producing industries, as before, and returns will be required from all firms over a certain size in each trade. A sample will be taken of the medium-sized and smaller firms, however, which means that the majority will not be required to make a return. From the information obtained, early estimates will again be made of certain important aggregates such as total sales, materials used, stocks, and capital expenditure for each trade.

The Order, which operates from December 31, 1953, is the Census of Production (1954) (Returns and Exempted Persons) Order, 1953. Copies may be obtained from the Stationery Office (2d.).

Undertakings producing coal, gas, electricity, oil shale, crude or refined petroleum, and shale oil products are exempted from making a census of production return to the extent to which they supply the necessary information to the Minister of Fuel and Power.



W-D

WOODALL - DUCKHAM

CONSTRUCTION COMPANY LTD.

Woodall-Duckham House, 63-77 Brompton Road, London, S.W.3
Telegrams: Retortical (Southkens) London Telephone: KENsington 6355 (10 lines)

Abstract of I.G.E. Communication No. 426.

Blending Coal for Carbonisation

BY G. E. HALL, M.Sc., A.R.I.C. and G. W. LEE, M.Sc., F.R.I.C.

British Coke Research Association

THE reasons for blending must obviously differ from country to country, and indeed from district to district, but they can nevertheless be classified under certain broad headings. The reason which is receiving much attention in all the principal coke-producing countries of the world at the present time is that of the need to conserve the reserves of the best coking coals. This problem is particularly acute in European countries and is assuming increasing importance both in the United States of America and in Great Britain. There is a world shortage of the best types of coals, and in Great Britain the reserves of type 301 coal amount only to 5.8% of the total estimated reserves, or about 1,200 mill. tons. It would be difficult to supply coke ovens in this country with only the very best coking coal; neither the reserves nor output are sufficient for this purpose. Much the same problem concerning coking coal supplies is found in America, where the best coking coal reserves are diminishing. A paper published some little time ago placed the life of the Pittsburgh bed at 100 years, and the Connellsville coking coal of this bed is said to be sufficient for only 20 to 30 years. Quite clearly, so far as America and Great Britain are concerned, it will be increasingly necessary in the future to conserve supplies of the highest quality coking coals by the use of lower rank coals. This can only be carried out by the extended use of blending techniques.

Conserving Resources

European countries, in their quest for an efficient substitute for blast furnace coke, are seeking new methods of carbonisation not based on the traditional oven chamber, but so far no process has been evolved which is capable of competing with the blast furnace for iron making or with the coke oven as a method of providing coke suitable for the iron and steel industry.

Blending as a means of conserving diminishing types of valuable coals is, therefore, assuming a greatly increased importance, and extensions of the technique must be brought into operation. The aim is obviously to reduce the proportions of the better coking coals in any particular blend by the substitution of lower rank coals while maintaining as far as possible the quality of the coke produced.

Blending to produce coke of a desired quality has been practised for many years at a large number of coking plants. The procedure originated in many cases in the need to maintain coke markets under competitive conditions. Blending for these purposes is usually directed towards the improvement of a basic coal mixture by the addition of coal or coals of better coking quality.

Perhaps the most important property of coke from the point of view of performance in the blast furnace is that of mechanical strength of the coke. This is normally assessed by the 1½ in. shatter index, which, although not universally accepted as a criterion, is nevertheless of comparative value and is widely used in Great Britain. The effect of blending different types of coal on the strength of the resultant coke may be judged by this test, and much work, both on the large scale and in laboratory appliances, has been carried out over a number of years with the object of determining the effect of different proportions of many coal types on coke strength. This work has been largely empirical, and the results have never been coordinated in a systematic fashion. The general conclusions are, of course, widely known: that coke strength depends primarily upon the quality of the coal carbonised, and that improvement of cokes made from medium or poor coking coals must be sought by the admixture of percentages of high quality (301) coking coals. Put in another way, it is necessary that the reserves of best quality coking coals should be conserved, and they should be replaced by types 401 or 501, or by blending them with as much coal of types 700 and 800 as is possible, bearing in mind the quality of the coke required. The degree of manœuvrability may be judged from the fact that a representative Durham coke will have a 1½ in. shatter index of the order of 83% to 87%, while a Yorkshire blast furnace coke may average approximately 75%. Cokes made from coal mined in the Derbyshire and Nottinghamshire areas, where the coal is of lower rank, have shatter indices lower than the above figure, and the coke produced is generally not strong enough for blast furnace purposes.

Results of Collective Work

In recent years collective work has shown quite clearly that the quality of any given coke is determined principally by the characteristics of the coal from which it is produced. Within a given coalfield an increase in B.S. Swelling Number of the coal carbonised above 5 to 6 is not necessarily associated with an increase in shatter or abrasion indices. This conclusion emphasises the fact that coals of high B.S. Swelling Index are valuable as materials for blending with coals of lower Swelling Index and so far as possible should be used as such. It should, of course, be noted that the B.S. Swelling Index is not, *per se*, an index of the coking quality of coal and should be used in conjunction with some index of the rank of coal.

Prolonged full-scale operation of coking plants attached to iron and steel works has demonstrated quite clearly the effect of the addition of a proportion of high quality coking coal, and in fact 12 of these plants are at present making such additions varying from 13.5% to 36.5%. In these cases high rank Durham or South Wales coal is added to lower rank coal of local origin. In this manner 1½ in. shatter indices of 85% and upwards are maintained in areas where the local coal alone would give comparable indices of 70% to 80%.

Other properties of coke are of importance from the point of view of blending, and reference should be made to the ash, volatile matter, and sulphur contents. Blending to control the ash content of the coke produced is obviously a method available to the coke producer, but is dependent upon the characteristics and quantities of the various coals available to him. Blending, bearing in mind

G. E. HALL

G. W. LEE

the volatile matter content of the coal rather than the quality of the coke produced, is obviously a technique of interest to the gas industry, where the main emphasis is upon the number of gaseous therms it is possible to produce. Sulphur control may be undertaken by blending a coal of low sulphur content with local coals which normally produce a good coke but of too high a sulphur content. Blending for sulphur control is becoming of increasing importance to the iron and steel industry, and measures which will reduce the sulphur content of the coke even by as little as 0.1% (of the coke) have been suggested as desirable.

While the bulk of blending practice normally concerns the blending of coals alone, a considerable knowledge has been built up of techniques which involve the blending of other materials with coking coal. Breeze has already been mentioned as one of these. It has been the practice for many years to blend back certain percentages of breeze as a means of improving the quality of coke and as an outlet for the breeze produced on the plant. There is little doubt that, when properly carried out, breeze blending up to certain limits has an advantageous effect on the strength of the coke produced without adversely affecting its abradability.

Economics of Breeze Blending

It was felt by many that breeze so employed must necessarily represent a considerable economic advantage to the plant. There was, however, little evidence either for or against this assumption, and the British Coke Research Association in 1948 published a report which described a method by which the economics of breeze blending could be assessed accurately, and in which it was shown that the economic advantage at that time was not so great as had been popularly supposed, averaging only some 6d. per ton of coke produced. Inert materials ranging from anthracite duff to boiler fly ash have been admixed with the charge at various times, all with a view to improving coke quality. The use of such material cannot be made the subject of a general recommendation but they may be satisfactory under particular conditions and should not be dismissed without some consideration. Other materials which have been blended successfully are pitch and, in certain circumstances, oil. Pitch may be blended from the point of view of coke quality or as a means of reducing the ash content of the resultant coke. Oil has been utilised for two purposes. In the first case, small quantities (about 0.25% by weight) are used for the bulk density control of the charge. This system has been in use at several coking plants for some little time, and it has been shown that oil added to the charge increases the bulk density and improves its regularity. The net result is improved consistency in the coke coupled with an improvement in coke quality. Blending of larger quantities of oil (up to 3.5%) has been employed as a means of increasing gas yield and at the same time providing an added control over the volumes of gas produced. Powell and Russell have discussed these points in a paper read at the Fourth Conference of the British Coke Research Association held in 1950.

Consistency of Coke Quality

The optimum properties of coke for any particular usage are difficult to define, and opinions vary widely as to the relative effects of specific qualities. It is, therefore, not surprising to find that in place of a possibly vain search for high quality increasing emphasis is being placed, both in America and Great Britain, on the need for consistency in coke properties. It is recognised that uniformity in coke quality, day by day, is better than a higher average of quality accompanied by marked fluctuations in some specific property. Consistency in coke quality can best be achieved in large modern plants which are provided with comprehensive blending and control services. In this way, for instance, inferior coking coals may be used to make coke that can be used in the blast furnace with reasonable results. Uniformity of coke quality is probably, in the ultimate, the most important consideration, and can only be achieved by the proper use of blending facilities.

A further important reason for blending, especially in the United States of America, is that certain coking coals cannot be carbonised alone because their use may lead to the generation of excessive coking pressures wih detrimental effect on the structure of the ovens. In this country, coals such as these are mainly confined to the South Wales coalfield and their use for oven purposes is carried out under strictly defined conditions. Comprehensive research on this subject has been carried out by the British Coke Research Association. Here again, the tendency to generate undue coking pressures may be limited by blending with coals of other characteristics.

Finally, economic reasons may dictate the establishment of blending techniques. Many factors are involved such as the location of the coking plant and its distance from coalfields, the type of coke required, coal prices, and so forth. In localities where it is impossible to obtain sufficient coal of one particular type, blending facilities may be necessary in order to justify the establishment of a plant of economic size. This is a fairly common circumstance in the case of modern plants, particularly those situated at iron and steel works remote from a coalfield.

DISCUSSION

Sir Ernest Smith, C.B.E., said that some years ago he caused all those who were likely to be interested in the experimental side of blending to be called to a meeting privately and informally to hear a suggestion from him that it would be well for those having facilities for this type of work to meet occasionally and to collaborate, and even to interchange facilities when those facilities were not being used by them. That suggestion was received with great enthusiasm, and to some extent it had been applied since.

He happened to be connected with a Committee of the Ministry of Supply that had to keep a watch on the development of coke ovens and the supply of materials for coke ovens—and coke, of course, was one of them. Incidentally, he was delighted to hear Mr. Lee say in presenting the paper that coke ovens and blending were far in advance in this country over anything that had been done in America or in Germany. He was very disappointed to hear it suggested yesterday that this did not apply in the case of silica. His Committee was also interested in the supply of silica, and he could assure them that there was no better silica produced anywhere in the world than was produced in this country. Obviously the technique was obtained from Germany and America, but they had developed it, and they were today getting a better silica than anything obtained in those two countries. He would like authoritatively to say that it was not true to suggest that America had developed silica in a better way than they had done.

It was important for the gas industry interests and enthusiasts to realise and underline and accentuate that it was a two-fuel industry. Up to quite recent times a good many gas undertakings had looked on coke in a similar way to that in which the coal industry looked on slacks that could not be got rid of; they just put in coke ovens to get rid of it and blew the gas to atmosphere. Although there was a lot of good work being done in certain parts, they were today as a whole nibbling at this question of the application of coke to the necessities of domestic heating.

In his view, the best coke for closed stoves and for boilers was a thoroughly well made hard coke properly graded for the particular size and the particular equipments used. Consequently, there was going to be a very big future for properly graded and properly sized hard coke. They needed to remember that if they wanted to make gas as cheaply as was possible under existing conditions and the existing price of coal.

It was not practicable, in his view, to install coke ovens in the built-up areas, but it was practicable to put in static methods of carbonisation as distinct from continuous verticals in many places where there was not the same nuisance to the amenities. But it was not practicable to put in blending plants on plants that were under about 1,000 tons a day, and there were not many people who would put in intermittents up to an extent of 1,000 tons a day. Therefore, careful study had to be made as to where in the gas industry they could apply blending.

There has been an enormous development in blending in the steel industry.

In fact, no modern plant had been installed in a steel works without a blending plant. The necessary constituents of those blends had sometimes had to be brought quite long distances, but it had paid. The coal industry, now represented by the National Coal Board, had also decided to put in larger-scale plants and to install blending plants wherever they erected modern plants.

The reserves of coal for the gas industry and the coking industry were seriously low. While everyone wanted coal for the gas industry to be as cheap as possible and while it was best for the community that it should get gas as cheap as possible, he knew that he was paying today £8 10s. a ton for coal, and he did not think gas had gone up in price in the same proportion, at any rate in his area. One must not look on the gas industry as being, as in the past, a purely competitive industry; it was a national industry to give service at as low a price as possible.

It should not be overlooked that it was nearly as important to study the question of crushing with coal blending. Varying degrees of crushing should go with varying types of coal, and only large-scale tests could confirm this.

A Standard at which to Aim

Mr. F. S. Townend (Woodall-Duckham Co., Ltd.) said they could accept the authors' contention that it was not necessary to use only the best coking coals in order to make a satisfactory metallurgical coke, and that an acceptable coke could be obtained if a proportion of poorer coking coals was intimately blended with good coking coals. This opinion obviously depended on the standard of coke quality demanded by the iron industry. It was hardly likely that the coke produced from a blend of good and poorer coking coals, prepared and coked in the present fashion, would have quite as high a shatter test as one produced from the best coking coals only. He would ask the authors whether there was an agreed standard to which a metallurgical coke must conform. If so, was this standard based on a shatter test, a strength of coke, or whether, as pointed out in the paper, credence was given to the value of uniformity? Unless they had some standard to which they aimed, they would not know how far blending in the sense that he was using the term could be taken.

He had said that so long as the present fashion of preparing and coking the coal was followed, they must accept that there would be some falling off of the shatter test of a blended coke. It was, however, a question whether the normal methods of preparing the coal before coking which almost invariably consisted in crushing the coal so that 80% to 90% passed a ¼ in. mesh enabled the best coke to be produced from blends containing poor coking coals. A redistribution of the petrographic constituents along the lines advocated by Burstlein seemed to require investigation.

The authors had rather summarily dismissed the question of blending in the gas industry. It might not have been sufficiently taken into account that blending in the sense that the authors used the term was applicable to gas-works where there were intermittent vertical chambers, horizontal retorts, and coke ovens. These plants were generally situated away from the coal-fields, and the question of additional transport costs might not loom very large. A further advantage was that these plants did not necessarily set out to make a coke having the high standard of mechanical strength required by the iron industry. Indeed, for the production of domestic grades of coke, the inclusion of a substantial proportion of the poorer coking coals was of benefit, since the coke from such coals had superior combustion characteristics. An outstanding factor, which must weigh heavily with the gas engineer, was the gas-making properties of the coals he used. Generally, the poorer coking coals were inferior in this respect to the good gas-making coals. If the differential prices between the two classes of coal took this fact fully into account, there would indeed be scope in the gas industry for the practice of blending.

Dr. A. Parker, C.B.E. (Director of Fuel Research, D.S.I.R.), remarked that the authors had rightly stressed the importance of blending coals before carbonisation as a means of conserving the limited resources of the better coking coals, particularly the coals of Type 301, the present production of which represented only about 5% of the total coal production. It was important that they should be in a position for many years to come to provide ample supplies of coke suitable for the metallurgical industries and for domestic heating appliances. On the domestic side the main winter load must be met by solid fuel if the load factors of the demand for gas—and electricity—were to be sufficiently high to ensure that gas and electricity could be sold at a reasonable price; and if they were to make any real headway in reducing the pollution of the atmosphere by smoke, the domestic consumer must use more coke and less bituminous coal.

Replacement of Coking Coals

With the object of determining to what extent the best coking coals could be replaced by coals of Types 401 and 501, or by blends containing appreciable proportions of the lower rank coals of Types 700 and 800, they at the Fuel Research Station had been for some time carrying out experiments on the carbonisation of selected coals and blends of coals. The work was being undertaken in collaboration with the National Coal Board, particularly the Durham and Northern Divisions, who had been largely responsible for the selection of the coals examined. In selecting the coals for blending, they had taken transport costs and other costs into account. It must be remembered that Type 301 coals were usually in thin seams and were more costly to produce than many other coals.

Experiments had been undertaken by carbonising the coals and blends in the setting of two Woodall-Duckham intermittent vertical chambers at the Fuel Research Station. These chambers had a mean width of 11 in. and each took a charge of about 2¼ tons.

In the first place, consignments of several selected coals were carbonised in a commercial battery of coke ovens, and in the intermittent vertical chambers. No difficulty was experienced in selecting conditions of carbonisation with the intermittent vertical chambers to give cokes similar in properties to those obtained with the commercial battery of ovens, thus ensuring that there should be no difficulty in translating the results obtained with the intermittent vertical chambers in full commercial practice.

The cokes obtained in the intermittent vertical chambers from Durham coals of Types 301, 401, and 501 (previously crushed to give 80% to 90% below ¼ in.) gave 1½ in. shatter indices in the range 94 to 90. The cokes produced from blends of each of these three types of coal with a Northumberland high-volatile, weakly-coking coal of Type 801/802, with up to as much as 60% of the weakly-caking coal, had 1½ in. shatter indices in the region of 90. The resistance of the cokes to abrasion, as measured by the Cochrane test, was reduced by the blending, but the addition of 30% to 50% of the weakly-caking coal to the coking coals did not reduce the Cochrane index below 74—*i.e.*, below the limit generally considered acceptable for coke for blast furnaces. Blending with a weakly-caking coal gave an improvement in coke reactivity accompanied by some decrease in density.

From the point of view of the gas industry, it should be mentioned that the addition of 60% of the weakly-caking coal caused a reduction of 15 to 40 B.Th.U. per cu. ft. in the calorific value of the gas and increased the specific gravity of the gas by about 0.05. In some instances the gaseous thermal yield per ton was reduced slightly.

Although it was accepted, as stated by the authors, that the properties of the coal carbonised were the dominant factors affecting coke quality, nevertheless the rate of coking could have a marked effect on coke strength. It was known, for example, that with coals of indifferent coking properties a fast rate of coking might produce improved coke. With the particular Durham coals and blends used in their investigation, however, an increase of coking rate from 0.8 to 0.9 in. per hour caused a decrease in shatter strength of the coke.

The full results of this experimental work would be published in due course.

He entirely agreed with Sir Ernest Smith that the gas industry should consider itself primarily as a two-fuel industry. This did not mean that he opposed experimental work and development work on complete gasification, but his view was that for many years to come complete gasification would not supply the whole of the gas required by the gas industry without increasing the price. It would be just one of the factors ensuring that flexibility which was required in the gas industry with changing market conditions for the main products and the by-products.

Matters of Significance

Mr. C. Johnson (Coal Officer, Gas Council) said that the need to conserve the reserves of the nation's best carbonising coals must be brought home to the coal industry with ever-increasing force. While it was true that their coal resources were constantly being added to as a result of continued search, it was significant that only a small proportion of the more recently discovered coals appeared to be coking coals. Furthermore, the expansion of the coking and the gas industries was likely to continue at a significant rate, particularly so in the case of the coking industry. During the last five years the coking industry and the gas industry had each carbonised about 5 mill. tons more coal, and last year the total quantity of coal carbonised was 52½ mill. tons. Having regard to the aspirations of the two

industries, it would be prudent to contemplate a further annual increase of 10 mill. tons in a period not exceeding 10 years from now.

The two industries would probably make different approaches to the problem of securing adequate supplies of coal suitable for carbonisation. Much of the coal used in the past for the production of hard coke had been too good, in the sense that it was over-rich in agglutinant and could have been blended with coals of a considerably lower order and could still have produced satisfactory coke, had the need been apparent. There were ample supplies of clean low rank coals, such as the authors discussed in the paper, and, broadly speaking, they occurred in convenient places so that blending by the coking industry was neither a difficult problem nor a new one. American and Continental blending practice was simple and straightforward; the only physical difficulty in this country was one of transport and handling of bulk supplies—a problem which he understood was now coming under review.

The gas industry could not derive any benefit from blending low rank coals with its normal requirements. Provided that coals of suitable quality were received, the economy of the gas industry was reasonably well balanced as between making good quality coke and gas of the right composition. To expand the tonnage of coal to be received by diluting the desirable types of coal with other coals of inferior gas-making value would provide no benefits at all, but would surely impair the economics of gas manufacture.

There was, therefore, a fundamental difference in considering the future problems of a satisfactory coal supply to the coking industry and to the gas industry. To put it simply, the gas industry could not be driven from its traditional sources of coal into coals of lower rank category merely to accommodate the expanding requirements of the coking industry. On the other hand, the coking industry, on the known facts, could conveniently add to its coking coals a sufficiency of suitable low rank coals, thereby creating for itself an ample supply of blended coals suitable for the manufacture of hard coke.

A Compelling Factor

Mr. **C. W. M. Rogers** (Simon Carves, Ltd.) said the most compelling factor which had so far influenced coke oven operators in this country towards blending had been the necessity to produce uniform quality of coke to suit the consumer, who was usually the blast furnace operator. In this connection it was no coincidence that two large coke oven plants in Germany, which had the most extensive coal blending equipment in the Ruhr, were central plants using a wide variety of coals and supplying coke for blast furnaces. One of these plants used up to 23 different sorts of coal, which for the Ruhr was a very large number.

As many blast furnace operators had stressed, uniformity was the most important property of coke used in iron smelting, and it was often worth while to make a small sacrifice of quality in order to secure uniformity.

Some details of the plant referred to in the paper were of interest. The capacity of the coke oven battery was 1,530 tons of coal per day on a dry basis, and work had already been begun to double its throughput. The situation of the plant was somewhat remote from the coalfields, and in order to guard against failure of supply it was considered desirable to arrange to carry an adequate stock of coal. Some 12 different types of coal were carbonised and some of these deteriorated seriously or even ignited on prolonged storage. These facts combined to decide the choice of blending and storing system.

The Robins-Messiter plant, which had been installed, enabled blending to be carried out with a wide variety of coals and could be arranged so that no coal remained in stock for an unduly long time, thus avoiding danger of deterioration by weathering.

Coal was received by rail, and sidings were arranged to accommodate 500 full wagons and 200 empties. The wagons were unloaded by two tipplers, and thence the coal went out to the stock field, and supplies for the battery were reclaimed from the field. Thus blending bunkers are entirely eliminated. Provision was made for the installation of primary crushers should these be required in the future.

The coal was put out by aeroplane trippers, which moved outward at a speed of 50 ft. per min. and inward at 75 ft. per min., the difference of speed being calculated to keep the rate at which the coal was deposited on the heap constant. The coal was reclaimed by a harrow working at right-angles to the long axis of the pile. The angle of the harrow was adjustable and was arranged to be a little steeper than the angle of repose of the coal. It made 18 strokes of 24 in. per min., and the coal was removed from beneath the harrow by a plough conveyor leading to a rubber belt conveyor running parallel with the long axis of the heap and alongside it. The speed of the reclaimer might be varied between 0.1 and 0.8 ft. per min., but when withdrawing the harrow to start on another heap, it might be moved at 30 ft. per min. A transfer car was provided to move the harrow from one heap to another.

Working Cycle

The rated throughput of the plant was 300 tons per hour, both putting to stock and reclaiming, and when the plant was working at full capacity each coal heap would be made up of some 200 layers of coal. At present three heaps were available, each containing 11,000 to 12,000 tons of coal. An additional reclaiming conveyor was being installed to allow a fourth heap to be laid down, and space was available for another heap and part of a heap in the future.

The cycle of working was as follows: One heap being made, one being picked up, and one heap standing. By this arrangement no coal was kept in stock for longer than three weeks.

The reclaiming conveyor delivered the coal to hammer mills, where it was crushed to a size grading selected, having regard to the coke quality required. From the mills the coal went to the service bunker, which held 5,000 tons, and was divided into two compartments. A rotating shuttle belt distributed coal in the service bunker.

The plant had been at work for only a few months and, while it could be said that its operation was perfectly satisfactory, no detailed tests on the efficiency of the blending had yet been carried out. However, the quality of the coke produced by the battery appeared to be both good and regular.

Mr. H. D. Greenwood (Carbonisation Department, National Coal Board) remarked that the gas industry might have in the future to undertake blending of the different coals with which it was supplied in order to avoid deterioration in the quality of coke produced. Blending in the coking industry had, up to the present, been restricted mainly to coking plants, for example, in South Wales, in order to deal with highly swelling coal, and to the coking plants of the iron and steel industry which were situated away from the coalfields and where it was presumably more economical to blend a proportion of strongly coking coal with the lower grade coals which were not so far removed. But, as has been stated, all the new coking plants which were being built both by the National Coal Board and by the iron and steel industry were being fitted with proper blending facilities. It had been found, for example, that by blending some 20% to 30% of Durham 301 type of coals a satisfactory blast furnace coke could be made from Derbyshire coking coals, and this had been practised on occasions to meet extra demands for metallurgical coke. It was, however, a costly process. One of the most important advantages of crushing and blending was that a more uniform and consistent coke was produced, and there were many people who considered that uniformity of quality was more important, within limits, than having a high shatter index, low ash, etc.

Mention was made in the paper of the French proposal for improving the coke quality for the high volatile, but only medium coking coals on the Saar and the Lorraine by the addition of finely crushed breeze (up to 10%) or of finely ground low temperature coke (up to 15%). By blending the low temperature coke the necessity of importing a large tonnage of highly coking coals from the Ruhr could be avoided, and the French were planning a large production of metallurgical coke by the process. An unusual example of blending came from Germany, where a blend of strongly coking and swelling coal which alone would not give a satisfactory coke, and finely crushed iron ore (40%) had been carbonised in coke ovens. The iron oxide was largely reduced in the process and the resultant coke was suitable for use in the blast furnace. This process was being tried out on a large scale.

Limited Coal Reserves

The figures quoted by the authors showed that about 40% of the coal used by the coking industry fell within the 301 to 400 types of coal, while the gas industry used about 13% of these first-class coals. Reserves of these grades of coals were limited, and production tended to fall. In addition, much of this coal was produced at a loss. There would not be sufficient of these grades of coal to meet the considerable increase in requirements of the carbonising industry during the next five to 10 years, even if the total production of all sizes were allocated for carbonisation. It would appear, therefore, that a larger proportion of lower grade carbonisation coals would have to be used by the carbonisation industry. A further consideration was that the proportion of fine coal mined was increasing with the development of mechanical methods of mining.

The problems so far as the coking industry was concerned were first to provide the necessary blending facilities

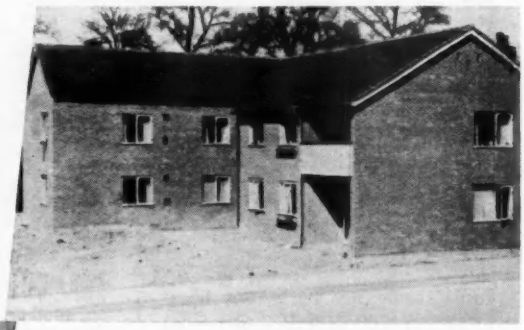
(*Continued on p. 49.*)

NEW WORLD hot water

Local authorities are providing **NEW WORLD** Constant Hot Water in areas where housing estates are in the making or existing buildings are being modernised—because the **NEW WORLD** Circulator assures, *always ready for use,* a plentiful supply of piping hot water for bath, washing up, laundry, and all domestic needs.

Made in three sizes:

C 12 — 5½ gallons per hour
C 28 — 13 gallons per hour
C 60 — 28 gallons per hour



The following are some of the Councils and Corporations who are using **NEW WORLD** *Circulators for conversion of existing properties or New Buildings*

Radiation Group Sales Limited

NEW WORLD NEW WORLD NEW WORLD

for new or old buildings

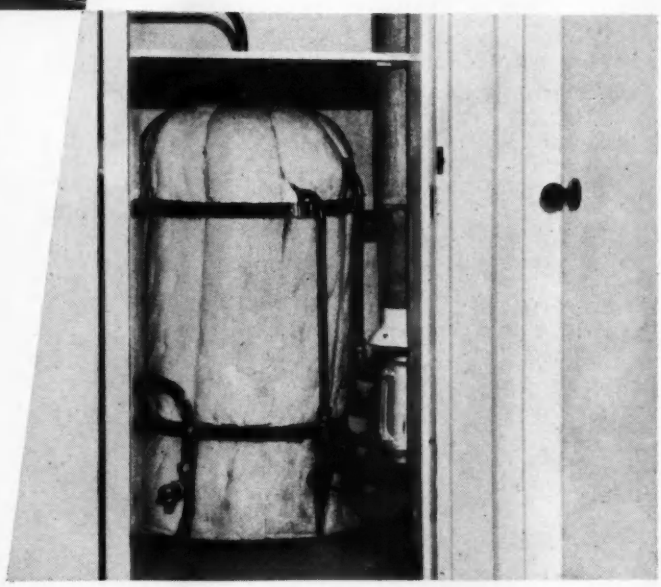
The **NEW WORLD** *Circulyn is equally effective either as the sole means of hot water supply or when fitted as an auxiliary.*

- **Same temperature winter and summer**
- **Maximum service**
- **Minimum servicing**

There's a **NEW WORLD** *for every kitchen and every purse*

LAMBETH
WANDSWORTH
HORSHAM
MAIDSTONE RURAL
BISHOPS STORTFORD
GILLINGHAM (DORSET)
COVENTRY
READING
PENGE
HESTON & ISLEWORTH

L.C.C. Estates at
HAINAULT
ST. PAUL'S CRAY
AVERY HILL
OXHEY
HAROLD HILL
AVELEY
SHEERWATER



7 Stratford Place, London W.1. Telephone: MAYfair 6462

NEW WORLD NEW WORLD NEW WORLD

THE
Flavel
68
Fawn
GAS
COOKER
THE POPULAR 'BOWFRONT'
COOKER IN AN
INEXPENSIVE NEW COLOUR
SIDNEY FLAVEL & CO. LTD - LEAMINGTON SPA
Telephones
Leamington Spa 100 & 3091/2
GAS APPLIANCE MANUFACTURERS
Telegrams
FLAVELS

at the coke ovens—this was being done at all new coking plants—and, secondly, to find where lower grade coal or possibly non-coking coal could be made available for blending with the minimum extra cost for transport. The colliery coking plants had in the main obtained their coal from the associated colliery, and blending might therefore materially increase the cost of production.

The problem broadly was to dilute the present supplies of high grade coking coal with slightly-caking or non-caking coals with the minimum disturbance to the present pattern of coal distribution. The coking industry was considering a system of relating the price of metallurgical coke to the quality of the coke, and the cost of blending to obtain a high quality cokes was an important consideration in that respect.

As with the coking industry, the gas industry might not be able to obtain the same proportion of the better class coals as formerly. The authors pointed out that the problem was more difficult since much of the carbonisation plant used by the gas industry was not suitable for using crushed coal. On the other hand, changes in the source of coals supplied to gasworks might not necessarily increase the cost of coal except perhaps to those works which were fortunately near to sources of first-class carbonisation coals.

If the gas industry had to adopt blending on a large scale there would be a tendency to adopt carbonising plant suitable for small coal, and the type of coke produced by the gas industry might thus tend to change. It was pointed out in the paper that by careful selection and blending of coals a coke suitable for the domestic coke fire can be produced in coke ovens, and the wider use of this type of carbonising plant might assist the gas industry in dealing with future coal supply problems.

The Problem of Cost

He had mentioned some of the problems which would arise if a larger proportion of medium coking and probably lower volatile coals had to be used in the future. Such changes in the types of coal used would tend to increase costs, but it was important to realise that it might also afford an opportunity of improving gas coke in quality and in uniformity. In the long term the necessity of blending coals might not therefore be less disadvantageous than might appear to be at first sight. There was no practical difficulty in blending coal provided the plant was available, but they still had a lot to learn about the composition of the blend in relation to coke quality. Coals did not always behave according to theory. Mr. Lee and his colleagues in the B.C.R.A. had been working on this problem for some years, and now they were to erect a full-scale coke oven experimental plant in which it would be possible to test out on a commercial scale the production of different grades of coke from a wide range of coals.

Mr. T. Biddulph Smith (North Western Gas Board) commented that plasticity was fundamentally the most important period of the carbonisation process, and unless one had some knowledge of what occurred at this vital stage it was impossible to visualise the number of possible chemical and physical reactions, their cause and their effect, so that blending followed no scientific principles but became a matter of 'hit and miss,' with the dice loaded against real advancement.

It would be fairly obvious if the same weights of two coals having the same volatile matter contents were carbonised under equal conditions of sizing, temperature, pressure, etc., in the same retort, they would initially evolve the same weight of products in the liquid vapour or gaseous state, but these products might have widely different chemical characteristics, depending on the chemical composition of the coal, the most simple example, of course, being the amount of oxidation the coal had received. Other factors, however, such as the carbon-hydrogen ratio, were equally important.

Effect of Plastic Layer

These volatile products, if extracted at their point of origin, or where they could more easily be obtained, from the coke side of the plastic layer, and condensed, were found to be mainly highly reactive unsaturated hydrocarbon oils having a hydrogen-carbon ratio in the region of 10:1. Their reactivity was so great that when exposed to the air on a watch glass oxidation proceeded at such a rate that it was almost impossible to get a satisfactory weighing on a balance.

Owing to the impermeability to gas passage of the plastic layer, the only free outlet for products leaving the wall side of the plastic layer was through the formed coke, and increasing temperatures existing there caused these extremely reactive hydrocarbons to be broken down to more saturated hydrocarbons of smaller molecular weight, with the simultaneous deposition of carbon—or 'near carbon'—in the open carbon structure of the already formed coke lying nearer to the heating wall of the retort. It was his view that this gradual blocking by deposited carbon of the free space of the coke structure on the one side of the liquid/gaseous phase zone, and the impermeability of gas passage of the plastic layer itself caused the internal pressures which were so dangerous when coking certain coals.

Primary distillation products having lower carbon/hydrogen ratio would generally be more saturated, would not be so completely decomposed in secondary reactions, and would not deposit so much carbon in the coke structure, so that the passage for gases and vapours would not be so completely restricted and harmful internal pressures would not be built up.

Varying Coke Pressures

It would be appreciated that if the chemical composition of the products initially evolved from the plastic layer varied, the results of the secondary reactions would likewise vary, as would also the consequent resultant physical conditions, giving varying coking pressures, varying the bulk density and combustibility of the resultant coke, and varying yields of gases and condensable hydrocarbons.

The authors stated that they had as yet no satisfactory apparatus for accurately assessing the many physical conditions which occurred during plasticity and the later stages of carbonisation. He would suggest for their consideration that they correlate these physical conditions with the carbon/hydrogen ratio of the oils initially produced from the plastic layer, since it was his definite view that this decided the nature of the secondary reactions which, in turn, had a considerable bearing on the whole of the physical conditions produced.

The authors quite rightly said that the control of coking pressure characteristics could be obtained by blending two or more coking coals by the addition of non-caking coals and by the admixture of breeze or similar non-caking substances. It had been demonstrated that the admixture of such inert substances would decrease the impermeability of the plastic layer so that dangerous pressures could not be built up between the plastic layer and the carbon-filled coke structure, the volatile products passing inwards through the comparatively cool coal core of the charge to escape finally through the top of the charge.

The authors, however, quoted Koppers and Jenkner as saying that the inclusion of 3% to 5% of finely ground coke breeze was insufficient to change the coking pressure characteristics, and he felt that this statement could only have been made through having insufficient appreciation of the many factors involved.

The Binding Constituent

Very few appreciated how considerable was the excess of binding constituent in strongly caking coal. He could only demonstrate this by saying he had produced under ideal laboratory conditions hard coke free from fissures and quite equal to the best metallurgical coke when using Durham coal infinitely ground and perfectly mixed with 80% of anthracite.

Again, Koppers specifically mentioned 'finely' ground breeze, and it should be appreciated that the finer the breeze and coal were ground the greater was the amount of breeze required. Mr. Hall knew of a bulk experiment they carried out in Middlesbrough some years ago, when they ground 1,000 tons of Durham coal in a rod mill with about 40% of coke breeze. This extremely fine mixture when carbonised produced the strongest coke he had ever seen and which had excellent results in the blast furnaces, yet the same coal required only about 3% of the coke breeze when the degree of grinding was that of the normal practice of the works. From this it would be obvious that the degree to which the inert diluent was ground was of major importance.

Belfast Corporation has approved a recommended increase of 4½d. per 1,000 cu. ft. in the price of gas, making a total of four increases in five years. A motion to refer the recommendation back to the Gas Committee was defeated by 27 votes to 12. Councillor Henry, Chairman of the Gas Committee, said that to refer the matter back for another month would mean a loss of £8,000. Coal had gone up by 6s. per ton, which was estimated to cost the Council an extra £75,000 a year. In reply to a further query about the reserve fund, the Chairman said it had stood at £99,000 for years, but latterly had begun to build up to meet contingencies such as replacements. Councillor Kinahan observed that the Gas Manager in submitting the proposed increase gave the impression that the increased price would barely balance production and would not certainly go near meeting the new coal bill. The rate now stands at 6s. 10½d. per 1,000 cu. ft.

a good
looker...

The No. 20 CENTURY GAS COOKER

The Century combines efficiency with pleasing appearance, is particularly easy to clean, having vitreous enamelled surfaces throughout—exterior finished in cream . . . The roomy oven gives a high quality cooking performance with a minimum gas consumption, and the whole of the oven space is available for cooking—the base being particularly suitable for slow cooking . . . Special oven features include Mainstat heat control, flash-tube lighting to burner, easy-clean rounded corners and drop-type door . . . Used oven heat vented in front of backplate and warms double-shelf plate-rack . . . The hotplate has four burners—all can be used for fast boiling *or* simmering —and a large griller. Hotplate fittings can be easily removed for cleaning and the hotplate-well is free from projections and dirt traps.

note the name — made by

MAIN

R. & A. Main Ltd · London and Falkirk

Annual General Meeting of the

Wales and Monmouthshire Juniors

THE annual general meeting of the Wales and Monmouthshire Junior Gas Association was held at the Three Counties Club, Hereford, this being a joint meeting between the Northern and Southern Sections of the Association.

In opening the meeting, Mr. H. BUCKLEY, President, welcomed Mr. A. G. Higgins, Assistant Secretary to the Institution of Gas Engineers, Mr. W. H. Blundstone, Engineer and Manager of the Hereford undertaking, who had kindly assisted in making the arrangements for the meeting and Mr. J. Powdrill, M.B.E., General Manager, Pontypool undertaking, who was representing the Wales and Monmouthshire District Section of the Institution of Gas Engineers.

The adoption of the Council report was proposed by Mr. W. E. WHITNEY (Bridgend), seconded by Mr. I. JENKINS (R. & A. Main, Ltd.).

Mr. C. E. BANHAM presented the Treasurer's report, which was adopted on the proposal of Mr. H. STEDMAN (Pontypool), seconded by Mr. H. B. KENDRICK (Conway).

The following officers were elected for the Session 1953-54:

President: R. Jones (W. G. B. Headquarters).
Senior Vice-President: J. Woodcock (Colwyn Bay).
Junior Vice-President: C. E. Banham (Cardiff).
Hon. Secretary: S. G. Meade (Newport).
Hon. Treasurer: C. E. Banham (Cardiff).
Hon. Librarian: J. Newman (Pontypool).
Hon. Auditors: T. E. Tyrrell (Cardiff), W. E. Crowley (W.G.B. Headquarters).
Hon. Transactions Secretary: H. Buckley (Pontypool).
Members of Council: R. J. K. Shepherd (Neath), G. G. Reeve (W.G.B. Headquarters).
North Wales Section: Chairman: C. W. Butler (Rhyl). *Secretary:* J. Lomax (Rhyl). *Members of Committee:* H. J. Stanley (Penmaenmawr), R. H. R. Tomkins (Bangor), H. Breeze (Wrexham), J. A. W. Stretton (Wrexham).

Address by Mr. Higgins

Following the business session, Mr. HIGGINS, in a brief address, said the Institution of Gas Engineers was very interested in the affairs of the Junior Gas Associations and greatly appreciated the close collaboration which was effected with them through the affiliation with the Institution of the British Junior Gas Associations' Joint Council. He had been very impressed during the nine years that he had been with the Institution with the excellent service which had been rendered by the Joint Council's representatives, both to the Institution's Council and to the Junior Gas Associations. The present representative, Mr. A. H. Dyer, was, of course, a past President of the Wales and Monmouthshire Junior Gas Association, who watched and safeguarded the interests of the Juniors in a very efficient and effective fashion. He had occasionally had cause to seek Mr. Dyer's assistance and advice and had reason to be grateful to him.

He felt it was a very encouraging sign to find the Junior Gas Associations, including the Wales and Monmouthshire Junior Gas Association, in such a flourishing condition. A few years ago when the former District Associations of Gas Engineers and Managers decided to become District Sections of the Institution, there was some apprehension in certain quarters as to what was to become of the Junior Gas Associations.

No Need for Apprehension

There was really no need for such apprehension for he felt sure that the area gas boards all realised, as did the managements of gas undertakings before nationalisation, that the juniors were carrying out most useful work. It was most important for platforms to be provided where the technicians and technologists in the gas supply industry, the nationalised industry, could exchange their knowledge and experience with their counterparts on the contracting side, which was still, for the most part, under private enterprise. For this reason he was surprised to find that qualified members of the contracting firms were not entitled to become members of the Association, although they could be corporate members of the Institution and members of the District Sections. In his view, the contractors had an important contribution to make in technical developments and progress and in discussions relating to them, and he was pleased to see that they could join in the Association's activities as associates.

In the field of technical education, the juniors had always played an important part, a fact which was emphasised by the recent appointment to the Institution's Gas Education Committee of a representative of the British Junior Gas Associations' Joint Council. It was in this field that he felt the industry must continue to rely to a great extent upon the juniors, both in an individual capacity and collectively through the Junior Gas Associations. The full effect of the implementation of the Education Act, 1944, had not yet been realised and it might be many years before it was, but, as the education system developed, more and more of the intelligent young people would find their way to the universities, and industries wishing to employ the best brains would have to recruit them from the universities.

Pupilage Schemes

Alternatively, they would require to have first-class pupilage schemes which would enable a youth leaving a secondary grammar school to acquire a professional qualification while he was training. The area gas boards were fully alive to this position and had initiated pupilage schemes to cover the requirements of both types of recruit, those coming from universities and, those coming straight from the grammar school. In either case, it would be, he felt, the duty of members of Junior Gas Associations to train these young people, for it was with them that they were likely to spend a good deal of their time and it was from them that they would learn the 'tricks of the trade.'

Mr. BUCKLEY thanked Mr. Higgins for his address and said that he agreed that it did seem inconsistent that qualified technical representatives of contracting firms were not admitted to full membership of the Association, whereas they could rise as high as the presidency of the Institution of Gas Engineers. He felt, however, that the matter was not quite so simple as it would appear.

Mr. S. G. MEADE, in seconding the vote of thanks, said he was particularly interested in Mr. Higgins' comments regarding the training of students. In fact, at a Council meeting that morning the very matter had been thoroughly discussed, and it was the intention of the Council of the Wales and Monmouthshire Junior Gas Association to put extra emphasis on this aspect of its activities.

Mr. POWDRILL associated himself with the remarks which had been made in response to Mr. Higgins' short address.

Mr. BUCKLEY then gave his Presidential Address, which will be published later in the *Journal*.

Proposing a vote of thanks to Mr. Buckley, Mr. JONES said that members had heard a most stimulating address.

Mr. STRETTON seconded the vote.

Belfast Gas Surplus

SUBMITTING his annual report to the Belfast Gas Committee, Mr. John L. Hyslop, General Manager and Engineer, commented on what he described as the very small surplus of revenue over expenditure after capital charges had been met. The reason was the exceptionally heavy increase in the cost of coal, wages, and gas oil. The Department budgeted for £30,000 less additional revenue than was necessary to meet the actual cost in the hope that conditions would remain fairly stable. In such circumstances the Department would finish the financial year with a reduced but adequate surplus. The Department used 247,600 tons of coal, the highest annual consumption to date, and 4,343 tons more than in the corresponding period of last year, the yield of gas working out at 17,972 cu.ft. per ton. The price of coal had mounted so rapidly in Belfast that it was now four times the pre-war price.

An adequate supply of coal had been received, though there had been some falling off in quality. At the end of the year the price of coal was 6s. 8d. per ton higher than at the beginning. A major increase in wages to gas workers in 1952 and heavy costs in respect of coal, gas oil and capital and other charges had added £90,000 to manufacturing costs.

The revenue derived from the manufacture and sale of gas amounted to £2,333,206 and the working expenses to £2,184,224, giving a gross profit on the year's trading of £148,981, or a decrease of £40,502 compared with last year. Rents on property and dividends on investments brought in a gross profit of £160,942. Capital charges were increasing rapidly. For the year they amounted to £154,643, an increase of £8,274 from the previous year. Gas charges had not been advanced for two years to any extent to cover the increased costs for coal, wages, etc. If any substantial further increases in wages or coal should take place, it would be necessary to take immediate steps to deal with the situation that would arise.

RETIREMENT OF SOUTHERN GAS CONSULTATIVE COUNCIL CHAIRMAN

OWING to the retirement from the Chairmanship of the Southern Gas Consultative Council of Alderman J. W. Moore, of Bournemouth, the meeting of the Council held at Bournemouth on June 10 was presided over by Councillor Mrs. A. E. M. Oliver, of Portsmouth, the Deputy Chairman.

Mrs. Oliver, at the commencement of the meeting, said that Alderman Moore had been a most able Chairman, and they had all appreciated his guidance, kindliness, and courtesy. She proposed they should record in the minutes their appreciation of his work and service to the Council.

Mr. M. E. Lefroy (Bournemouth) seconded, and the resolution was unanimously passed.

An Arbitrary Rule

Several members spoke in protest against the Ministry's arbitrary rule of retirement at 70, and Mrs. Conner (Totton) suggested they should plead with the Minister to reinstate Alderman Moore in the Chairmanship, but no further action was taken.

A letter was read from Radio Heaters, Ltd., Wokingham, stating that they now had to pay 3d. per therm more for their gas than the price ruling only three miles away at Earley, on the outskirts of Reading. This would make a difference to them of about £150 a quarter during the winter quarters. They had approached the Manager of the Southern Gas Board, who had advised them that nothing could be done unless they took more than 10,000 therms during every quarter of the year. The company's letter said they used gas for heating their factory, and it was obviously impossible to do as suggested because their consumption was relatively low in the summer.

The reply of the Secretary, Mr. C. King, which was approved by the Council, pointed out that if the price of gas in the Camberley and Wokingham areas was reduced, Reading consumers would be subsidising those in Wokingham. It was not correct to say that Wokingham was being asked to subsidise Reading.

The Council spent a considerable time hearing the views of a deputation from Tintometer, Ltd., a Salisbury firm making instruments for colour measurement and glass, etc. They were represented by Colonel A. J. Fawcett (Chairman), Messrs. G. J. Chamberlin (Managing Director) and G. D. D. C. Lovell (Technical Director).

Putting the firm's case, Colonel Fawcett said the single tariff now in force was crippling their industry. He had carried out a survey of alternative quotations from other gas board areas, and it seemed that a single tariff in the area of the Southern Gas Board area was far and away the highest industrial tariff in any part of the country, and the extra cost to his company was many hundreds of pounds and, in some cases, was thousands of pounds more. 'The position is that we just cannot continue to carry on in this area at that cost,' he said. Their fuel bill, which included £750 for electricity, amounted to 10% of their total turnover. They wanted to remain in their home town, but they might be forced by the cost of gas to consider some alternative place.

No Special Concession

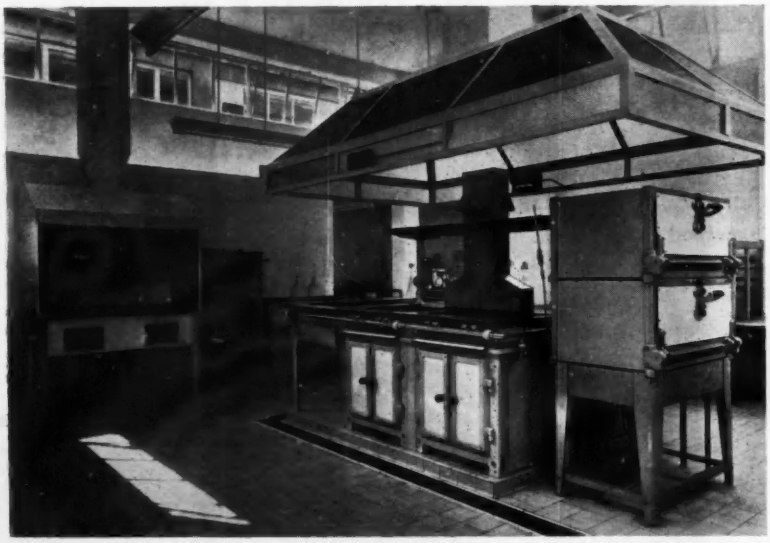
The Council decided that they could recommend no special concessions to Tintometer, Ltd., but they would consider the question of forming a special industrial committee.

Subsequently the Council decided to appoint a sub-committee from the Council to consult with the Southern Gas Board and examine the industrial tariff policy of the Board.

The sub-committee appointed was: Colonel G. P. Durham (Portsmouth), Mr. N. W. Gardiner (Reading), Councillor S. E. Vincent (Andover), Alderman S. J. Gale (Bridport), Councillor R. W. Jones (Southampton), Mr. J. S. Woodrow (Reading), and Mr. R. Craig (Oxford).

NINTH NAAFI CLUB

The NINTH PERMANENT Naafi Club to be built in the United Kingdom since the end of World War II was opened by H.R.H. The Duchess of Gloucester at Chippenham, Wiltshire, on May 8. Built on a plateau on the top of a steep-sloping meadow, the Chippenham Club looks out over the rolling Wiltshire countryside. R. & A. Main, Ltd., were responsible for supplying the bulk of the equipment



Part of the well arranged kitchen, showing the island site, two-pan fish fryer and salamander grill.

in the kitchen block which incorporates in the kitchen one island site comprising a DYC 4/62BM central double-oven gas range, fitted with a bain marie and a two-tier electric pastry oven. A GF 56 two pan fish fryer, GG 30 gas griller and salamander, and 25 gal. bulk water boiler form an adjacent wall site. In the vegetable preparation room the equipment comprises a GBP. 20 gas boiling pan and a gas steaming oven fitted with five stainless steel trays. It is estimated that during the week-end peak periods up to 500 meals will be served to visiting Servicemen and women.

Liverpool Lighting

ON HIS RE-ELECTION as Chairman of the Liverpool Corporation City Lighting Committee, Alderman A. Critchley said the Committee was responsible for the lighting of approximately 1,000 miles of streets and passages for which something like 34,000 lamps were required.

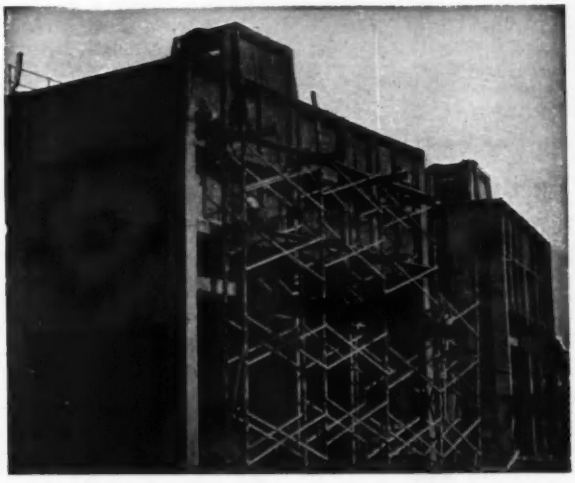
He stressed that the city lighting engineer was also responsible for many other activities, including the maintenance of electrical and mechanical equipment in the Mersey Tunnel, the repair of gas and electrical installations and appliances for other Corporation departments, and the operation and maintenance of public lighting for neighbouring local authorities.

In the main the policy of the Committee during the past year had been to concentrate on the restoration of side street and passage lighting, but in main street lighting several major schemes had been completed. Pre-war the city had in commission 17,989 electric and 15,181 gas lamps, a total of 33,170 lamps. Today the numbers were 21,700 electric and 11,000 gas lamps, a total of 32,700. So far as malicious damage was concerned, last year 32,156 glass sides and 4,040 bulbs had to be replaced at a cost of £4,626.

They had a difficult year ahead, for the necessity for much new work and improvements and the increasing cost of labour and materials had to be weighed against the earnest desire to refrain from borrowing and the necessity to keep the rate demand as low as possible.

Among those to be presented when the Queen and the Duke of Edinburgh visit Caernarvon on July 10 is Mr. R. Thomas, of Bryn Bela, Caeathro, near Caernarvon, an employee of the Wales Gas Board.

Gunite



One of the reinforced concrete structures reconditioned with Gunite for the City of Carlisle Gas Undertaking.

Gunite—concrete applied by air pressure—has numerous applications where its great density and extreme adhesion have exceptional value.

For repairing reinforced concrete it has particular merit, as, due to the method of application, a uniform density and adherence is obtained whenever Gunite is applied.

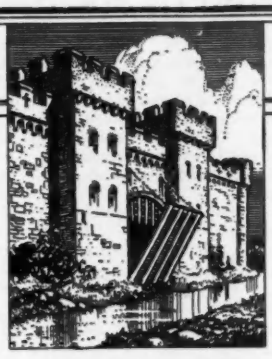
For lining coal bunkers and steel chimneys it possesses great resistance to corrosion and protects steel-work from the abrasive action of coal or coke.

Handbook "GUNITE" sent on request

THE CONCRETE PROOFING CO., LTD.

100, VICTORIA STREET, S.W.1

Telephone: Victoria 7877 & 6275



PROTECTION

GAUNTLET

GAUNTLET

WEATHER TESTED PAINTS

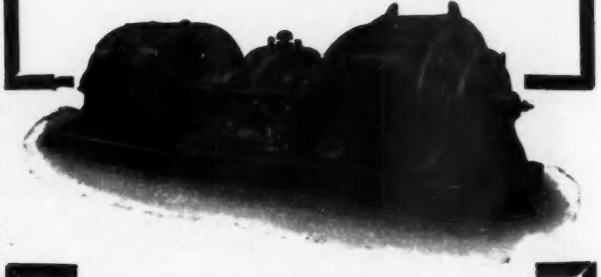
ARCHD H. HAMILTON & CO. LTD

27-37 BARDOWIE STREET POSSILPARK GLASGOW.N

TURBO-COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.

★ ★ ★

We build a complete range of Compressors & Exhausters for air and GAS, suitable for all purposes connected with the GAS industry, including Turbo-Compressors for large capacities, as illustrated below.



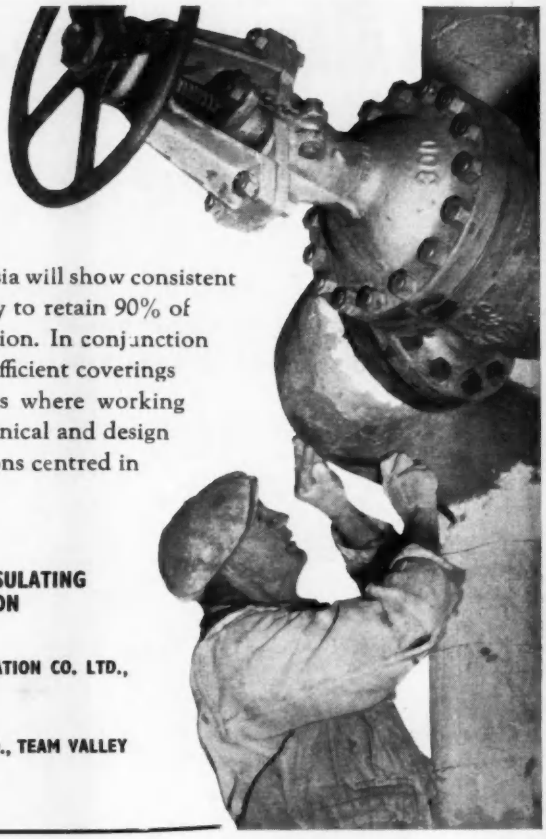
WRITE FOR PAMPHLET No. 1018 GIVING PARTICULARS—

REAVELL & CO., LTD.,

RANELAGH WORKS, IPSWICH.

Telegrams: REAVELL, IPSWICH Telephone: 2124 & 5.

Ready for Tomorrow



Insulation as efficient and durable as Darlington 85% Magnesia will show consistent fuel saving throughout the competitive years ahead. Its ability to retain 90% of process heat will quickly repay the capital cost of the installation. In conjunction with Dextramite high temperature insulation, enduring and efficient coverings can be quickly and easily applied in all industrial processes where working temperatures from 200°F to 2,000°F are required. Expert technical and design services are available, backed by local contracting organisations centred in all the major industrial areas.

DARLINGTON
85% MAGNESIA
Insulation

Manufacturers :
THE CHEMICAL & INSULATING CO. LTD., DARLINGTON

Insulation Contractors :
THE DARLINGTON INSULATION CO. LTD., NEWCASTLE UPON TYNE

Sheet Metal Fabricators :
S. T. TAYLOR & SONS LTD., TEAM VALLEY GATESHEAD

Plenty to Spare...

During the past few months, considerable re-organisation of our works has taken place; production is planned on an entirely new basis, with the result that output is increasing. This is particularly so with fittings, and deliveries can be made from stock as shown.

Your orders will be dealt with promptly and efficiently

BARREL NIPPLES. Full range of sizes from ⅛in. to 6in. Black or galvanised.

No 23

RUSSELL BROS (WALSALL) LIMITED
BRADFORD TUBE WORKS · WALSALL

TRADE MARK

WESTWOOD & WRIGHTS
LIMITED

BRIERLEY HILL, STAFFS.

GASHOLDERS · PURIFIERS · WASHERS
CONDENSERS · CASTINGS · STEELWORK
GAS VALVES · WELDED PIPES

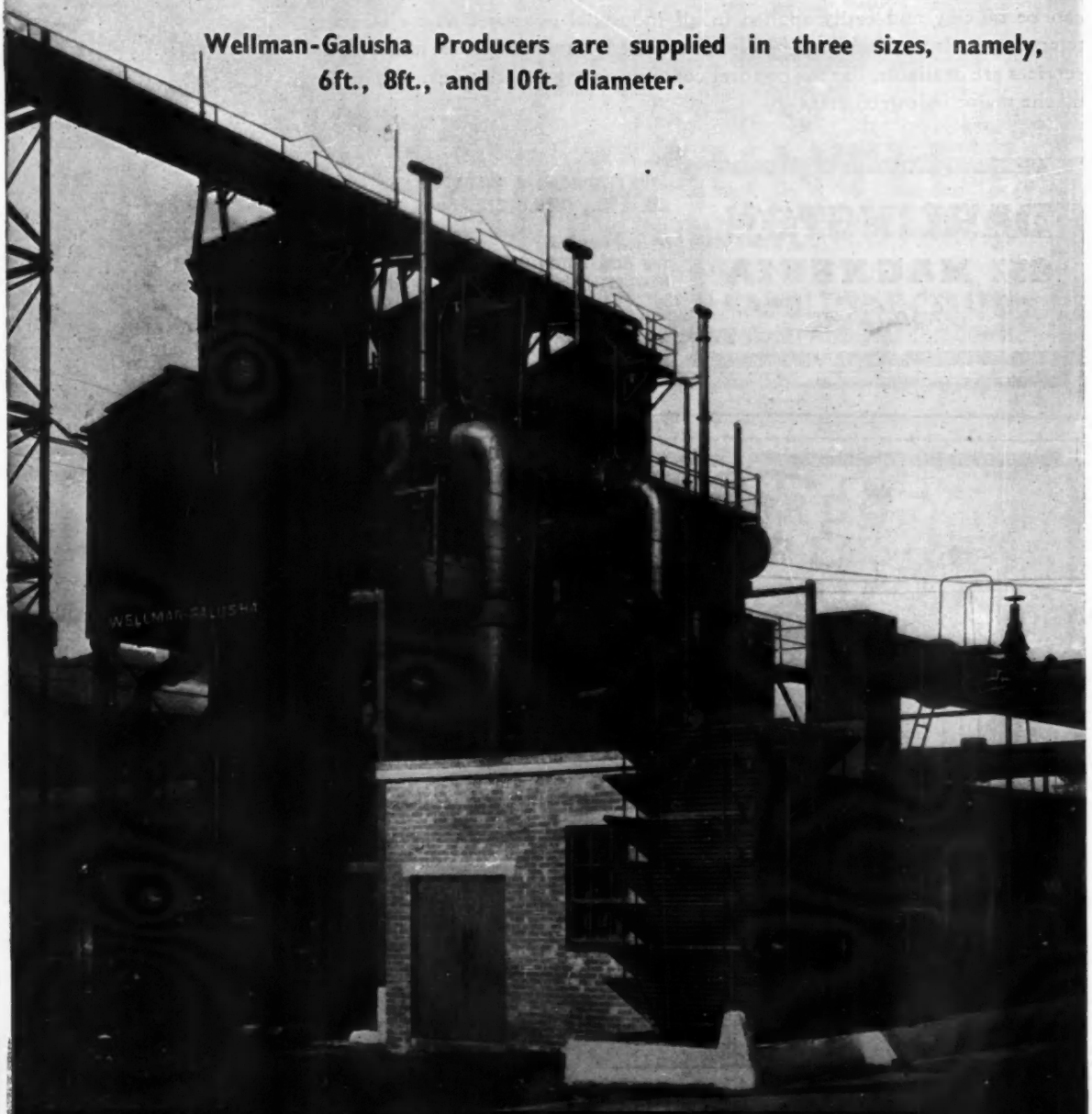
Wellman-Galusha Gas Producers

generate

High Quality Gas from Low Grade Fuels

A battery of three 8ft. diameter Wellman-Galusha Gas Producers, equipped with fuel storage bins and Gas Cleaning Plant, for the efficient gasification of anthracite, coke or coke breeze.

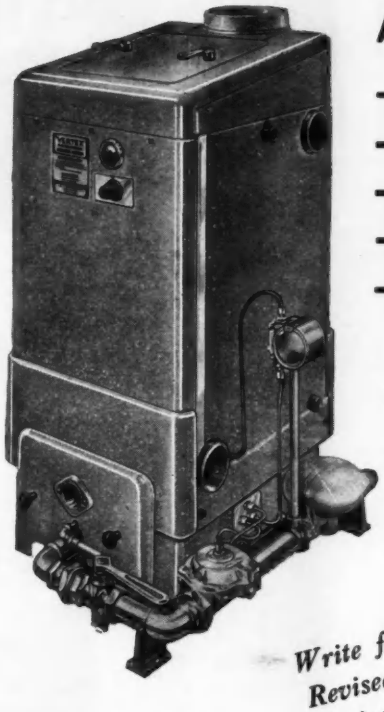
Wellman-Galusha Producers are supplied in three sizes, namely, 6ft., 8ft., and 10ft. diameter.



THE WELLMAN SMITH OWEN ENGINEERING CORPN. LTD.
PARNELL HOUSE, WILTON ROAD, LONDON, S.W.1 WORKS: DARLASTON, SOUTH STAFFS.

SIMPLIFIED

- Removable door for flue inspection
- Attractive vitreous enamel finishes
- Reliable flame failure device
- Welded steel construction



MAINTENANCE

- For Central Heating and Direct or Indirect Hot Water Supply.
- Combustion conforms to B.S.S.717
- Lower maintenance costs

Boiler Size	Output B.Th.U.'s on 500 C.V. gas	Height	Depth	Width
No. 0	50,000	3' 0"	2' 2"	1' 4"
No. 1	80,000	3' 1"	2' 6"	1' 10"
No. 2	160,000	3' 9"	2' 6"	1' 10"
No. 3	200,000	4' 5"	2' 6"	1' 10"
No. 4	300,000	3' 10"	3' 7"	2' 4"

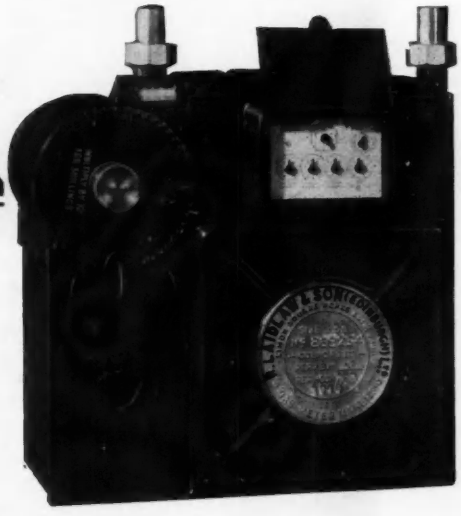
The "VERTEX" GAS FIRED BOILER

AUTOCONTROL BOILERS LTD.

Write for our Revised 1953 Price List.

GAS-FIRED VERTEX VESTA CENTRAL HEATING & HOT WATER SUPPLY BOILERS

167, TEMPLE CHAMBERS, TEMPLE AVENUE, LONDON, E.C.4
Telephone: CENtral 7821. *Telegrams:* 'AUTOCONTROL' CEN 7821



I.G.E. AND HIGH CAPACITY

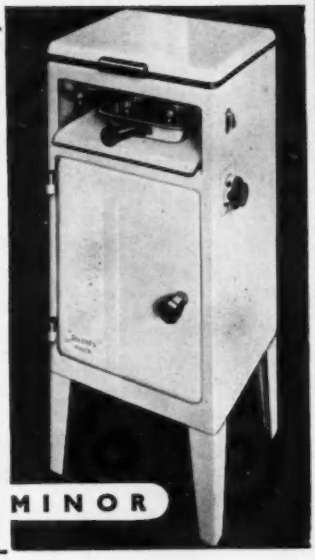
SLOT AND ORDINARY METERS

Nothing But the Best Materials and Workmanship Used in Their Manufacture
Repairs—Parts Supplied

R. LAIDLAW & SON (Edin.) Ltd., SIMON SQUARE WORKS, EDINBURGH
8/9, LUDGATE SQUARE, LONDON, E.C.4

BIG Capacity for LITTLE Kitchens

Especially suited to the kitchens of flats and small houses, this highly efficient cooker provides utmost cooking capacity in the least possible space. Cast iron construction ensures strength and durability and reduces maintenance costs to a minimum, thus making the Dainty Minor particularly suitable for simple hire or hire purchase.



Approved and adopted by leading gas boards

The **Dainty** MINOR

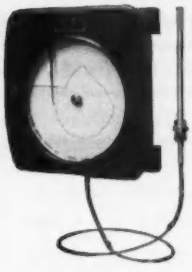
R. RUSSELL & SONS, LTD., DERBY

Agents for Scotland and Northern Ireland:

JAMES R. THOMSON & CO. LTD., 41, YORK STREET, GLASGOW, C.2

DIAL THERMOMETERS, RECORDERS and CONTROLLERS

for Industrial Application.



Over 2,000,000 Rototherms in daily use are proof of reliability which with the clear dial and robust construction make them the perfect instruments for all temperature indication, control or recording. Standard and special models are available to meet most requirements. Details upon request.

We are also specialists in bi-metallic applications

Rototherm

DIAL THERMOMETERS

THE BRITISH ROTOTHERM CO. LTD.

Merton Abbey, London, S.W. 19. Phone: LIBerty 7661

TWO 48" OVERDRIVEN CENTRIFUGALS WITH STEEL BASKETS DRIVEN BY SINGLE SPEED FLAME-PROOF MOTOR AND BELT THROUGH VARIABLE SPEED HYDRAULIC COUPLING

BROADBENT CENTRIFUGALS

FOR

ANTHRACENE

NAPHTHALENE

AMMONIUM SULPHATE

AND ALL

CRYSTALLINE

OR

GRANULAR

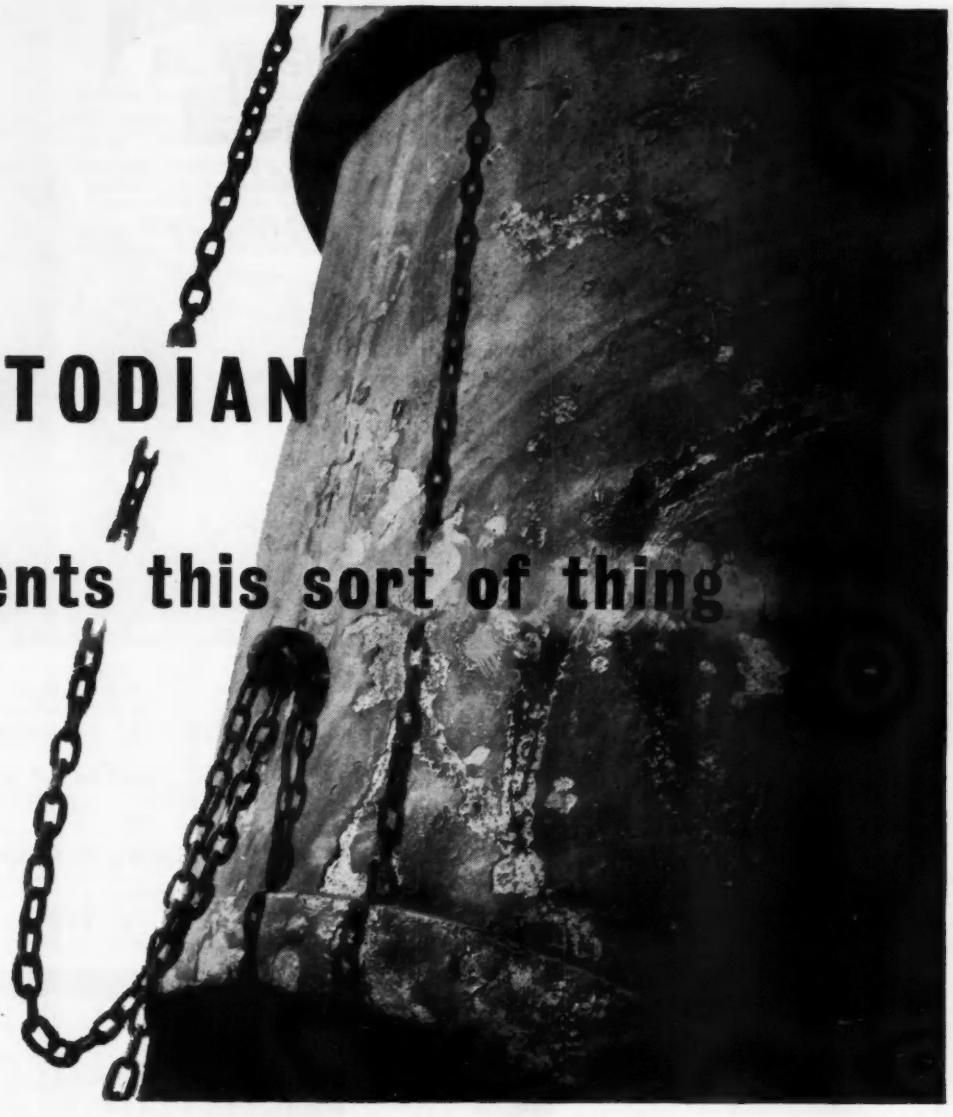
MATERIALS

DIRECT ELECTRICALLY-DRIVEN OR BY SEPARATE MOTOR AND BELT WITH ACCESSORIES FOR SPECIFIC DUTIES

THOMAS BROADBENT & SONS LTD.

TELEPHONE 5520 (6 lines)

HUDDERSFIELD



RUSTODIAN prevents this sort of thing

Rustodian Rust-Inhibiting Lead Paint is the remarkably successful new primer for iron and steel. It contains a new pigment, calcium plumbate, which is one of the most powerful rust inhibitors known. It prevents deep pitting and the spreading of rust under the paint film—even when the film is scratched and the metal exposed.

- Under marine conditions it has eight or nine times the life of other commonly used rust-inhibiting paints.
- It adheres tenaciously—even to new galvanising.
- It forms a mechanically strong, water-repellent film which becomes progressively tougher—owing to inter-action between pigment and vehicle—yet retains its elasticity throughout its life.

Rustodian can be used under any type of decorative finishing system or coat-on-coat for the complete painting system. It brushes out easily, covers 800/900 square feet per gallon and dries overnight with an eggshell gloss finish. Available in Peach, Light Stone, Light Brunswick Green, Imperial Brown, Dark Battleship Grey and Venetian Red.

Further particulars and colour card are available on request. Please write to any of our addresses.

ASSOCIATED LEAD *

Associated Lead Manufacturers Limited is a single Company which specialises in the manufacture of Lead Pigments and Lead Paints

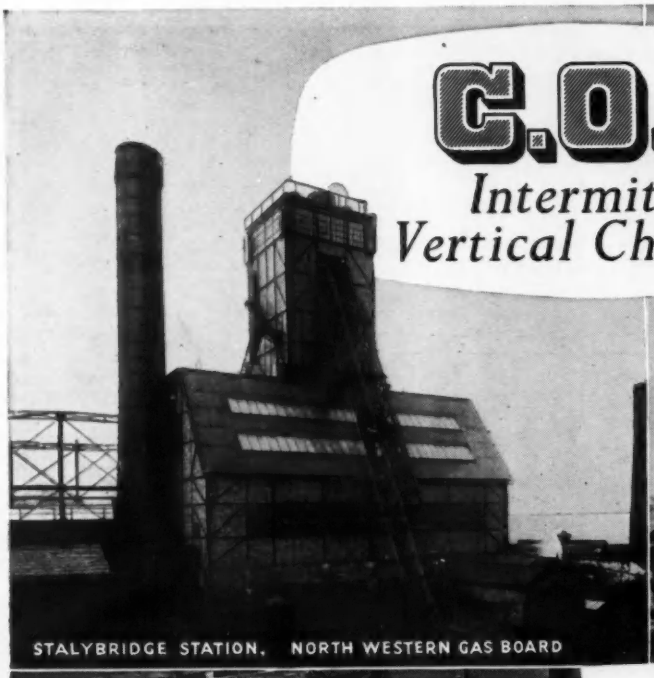
IBEX HOUSE, MINORIES, LONDON EC3
CRESCENT HOUSE, NEWCASTLE
LEAD WORKS LANE, CHESTER

ASSOCIATED LEAD PRODUCTS

EXPORT ENQUIRIES TO: THE ASSOCIATED LEAD MANUFACTURERS EXPORT CO. LTD. IBEX HOUSE, MINORIES, LONDON EC3

C.O.L

Intermittent Vertical Chambers



STALYBRIDGE STATION. NORTH WESTERN GAS BOARD

PETONE STATION. PETONE GAS BOARD. N.Z.

FLATHOUSE (PORTSMOUTH) STATION. SOUTHERN GAS BOARD

Plants at home and in the Dominions still giving excellent results after many years of operation

BRIDLINGTON STATION. NORTH EASTERN GAS BOARD

GAS CHAMBERS & COKE OVENS LTD.

Engineers and Contractors

CHANDOS HOUSE, BUCKINGHAM GATE, WESTMINSTER, LONDON, S.W.1

Telephone: ABBEY 6912

FWS 1193

PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates: Home and Empire :- 52/- per annum; Foreign :- 60/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

MIDLANDS OFFICE: 10, Union Street, Birmingham.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone: Harrogate 84291.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. Telegrams: Gasking, Fleet, London.

OXIDE

DUTCH AND DANISH BOG ORE SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright. Highest prices paid for Spent Oxide.

Send your enquiries to

GAS PURIFICATION & CHEMICAL COMPANY LIMITED

ESTABLISHED 1873

PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

Offer Your

SCRAP GAS METERS

direct to the actual smelters

OAKLAND METAL Co. Ltd.

142 NEW BOND STREET, LONDON, W.1.

Phone: GROsvenor 5241-4

Works: Willington, Derby

FIRE!

MY LIFE LOST BUT FOR

NU-SWIFT!

"A match struck...an explosion... petrol-sprayed I became a living torch... but my 13-year old Nu-Swift Extinguisher saved me from agonizing death." Everyone has too many fire risks. What would you have done?

NU-SWIFT LTD. • ELLAND • YORKS

In Every Ship of the Royal Navy

PRESSURE VESSELS

FOR THE GAS AND CHEMICAL INDUSTRIES

Welding in all Metals (Gas or Electric)

Welding Repairs

RICHMOND WELDING CO.

Richmond Road, BRADFORD

Tel.: BRADFORD 25405

"KLEENOFF"

THE COOKER CLEANER

"KLEENOFF"

FIBRE BRUSHES RUBBER MOPS

"KAY-DEE" *

KETTLE DESCALER

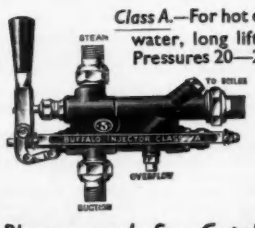
For resale to the public, and in bulk for Works use.

BALE & CHURCH, LTD.

7, CROMPTON WAY, CRAWLEY, SUSSEX.

BUFFALO INJECTOR

Class A.—For hot or cold water, long lifts, etc. Pressures 20—200lbs.



Please send for Catalogue

GREEN & BOULDING, LTD.

162a Dalston Lane, London, E.8

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18–64 inclusive or a woman aged 18–59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

SCOTTISH GAS BOARD

GLASGOW DIVISION

(GLASGOW DISTRICT)

SALES AND SERVICE SUPERINTENDENT

APPLICATIONS are invited for the post of SALES AND SERVICE SUPERINTENDENT of the Glasgow District. The selected candidate will be responsible to the Management for all Sales and Distribution functions from the service at the building line to the consumer's appliance. These responsibilities include all Sales and Publicity activities, the Fitting of Meters and Appliances, the Repair of Meters and the Supervision of Workshops and Stores. An Industrial Gas Centre to be set up for the Scottish Area will also come under the responsibility of the Sales and Service Superintendent.

The salary for the post will be £1,250 per annum, rising by annual increments of £50 to a maximum of £1,500.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications, stating age, full details of qualifications and experience, together with the names of two referees, should be addressed, endorsed S/S to the undersigned not later than fourteen days after the appearance of this advertisement.

D. F. YOUNG,
Divisional Controller.

30, John Street,
Glasgow, C.1.

SOUTH AFRICAN LIGHTING ASSOCIATION LIMITED

Grahamstown, South Africa

ENGINEER AND MANAGER

APPLICATIONS are invited for the position of ENGINEER AND MANAGER at the Gas Works, Grahamstown, Cape Province, South Africa.

The Works consists of Stop-end Horizontal Retorts with an output of approximately 45 million cubic feet per annum.

Applicants must have a thorough knowledge and experience of the erection and maintenance of Carbonising Plant and the usual Gasworks ancillary plant. Experience of Commercial Management of a Gas Undertaking would be an advantage.

The appointment will be for an initial period of 5 years under a Contract, with option to renew. A medical examination will be required. Free passage will be provided.

Salary in the range of £700 to £800 per annum according to experience, and including present cost of living allowance of approximately 20%, plus an interest in profits, free house and gas.

Applications, stating age, whether married or single, qualifications, experience, length of notice to terminate present employment, together with *copies* of three recent Testimonials to be addressed to:—The Secretary, South African Lighting Association, Ltd., 48, Copthall Avenue, London, E.C.2., not later than July 11, 1953.

(Classified advertisements continued on page 62)

APPOINTMENTS VACANT (ctd.)

CITY OF WATERFORD GAS COMPANY

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT primarily to take charge of carbonisation (Horizontals and C.W.G.). The salary will be £450-£25-£600 per annum together with free house and fuel.

Replies, stating age, qualifications and experience, should be addressed to : G. Anderson, Ltd., 11, Merrion Square, Dublin.

WEST MIDLANDS GAS BOARD

TECHNICAL ASSISTANT TO THE SALES AND SERVICE MANAGER, BOARD HEADQUARTERS, BIRMINGHAM

APPLICATIONS are invited for the above post from candidates preferably possessing a Higher Grade Certificate in Gas Engineering (Supply) and with considerable technical and practical experience in the domestic and commercial utilisation of gas. Ability to undertake lectures and demonstrations is essential.

The salary for the post will be within Grade XII (£740 to £865 per annum) of the National Salary Scales for Gas Staffs.

The post is pensionable and the successful applicant may be required to pass a medical examination.

Applications stating age, personal details, particulars of training, experience and qualifications, together with the names of two referees, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6 Augustus Road, Edgbaston, Birmingham 15, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WOLVERHAMPTON AND DISTRICT DIVISION

GROUP SALES AND SERVICE OFFICER

APPLICATIONS are invited for the above position, with responsibility to the Divisional Sales and Service Officer for the control of Sales and Service staff and work, including the showrooms, of a group of undertakings in the south of the Division, with up to 41,000 consumers.

Applicants must have had experience in the control of the staff and work of a Sales and Service Department of a gas undertaking of reasonable size, and should preferably hold the Higher Grade Certificate in Gas Engineering (Supply) of the Institution of Gas Engineers.

The salary for the post, which is pensionable, will be within Grade X (£665 × £25—£765) of the Salary Scales of the National Joint Council for Gas Staffs. The successful applicant may be required to pass a medical examination.

Applications giving full details of age, qualifications and experience, and the names of two referees should be addressed to Mr. F. C. Briggs, Divisional General Manager, West Midlands Gas Board, Wolverhampton and District Division, Kensington House, Bath Street, Dudley, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WOLVERHAMPTON AND DISTRICT DIVISION

GROUP DISTRIBUTION SUPERINTENDENT

APPLICATIONS are invited for the above position, with responsibility to the DIVISIONAL DISTRIBUTION ENGINEER for the distribution system, comprising 290 miles of mains laid, in the Stourbridge, Cradley Heath, Rowley Regis and Halesowen District.

Applicants must have had extensive experience of main and service laying and kindred projects and of the control of labour. The duties will include the supervision of a pipe stockyard.

The salary for the post, which is pensionable, will be within Grade X (£665 × £25—£765) of the Salary Scales of the National Joint Council for Gas Staffs. The successful applicant may be required to pass a medical examination.

Applications giving full details of age, qualifications and experience, and the names of two referees should be addressed to Mr. F. C. Briggs, Divisional General Manager, West Midlands Gas Board, Wolverhampton and District Division, Kensington House, Bath Street, Dudley, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

SOCIÈTE ANONYME DU GAZ DE RIO DE JANEIRO (total installed capacity 11,650 million cu. ft. per annum) a British Company in Brazil, invite applications from suitably qualified single men aged 25-35 for a post in Rio de Janeiro of TECHNICAL ASSISTANT in their Gas Works. Candidates should be experienced in gas manufacture and works maintenance with continuous and intermittent retorts, C.W.G. and ancillary plant. They should preferably hold the Higher Grade Certificate of The Institution of Gas Engineers in Gas Engineering (Manufacture). Salary will be in accordance with qualifications and experience taking into consideration cost of living ; three year agreement subject to renewal with first class passage both ways; four months' paid leave after three years' service ; superannuation scheme. Written applications which will be treated in strict confidence, should be made to Mr. W. P. Kellett, Joint Manager, Canadian-Brazilian Services Limited, 148, Leadenhall Street, London, E.C.3. Applications should be received by July 15, 1953.

WALES GAS BOARD

SWANSEA UNDERTAKING

APPLICATIONS are invited for the appointment of ASSISTANT MANAGER AND ENGINEER to the Swansea Undertaking. Applicants must have had experience in the management and administration of a Gas Undertaking in addition to possessing a thorough knowledge of modern manufacturing and distribution practice. Appropriate technical qualifications are essential.

The commencing salary will be £1,000 per annum. The salary will be reviewed at the end of a year's service.

Applications, giving details of age, qualifications, experience and present position, should be submitted, together with the names of two referees, to :—E. Ablett Esq., O.B.E., Engineer, Manager & Secretary, Wales Gas Board, Swansea Undertaking, Gas Offices, Oystermouth Road, Swansea, not later than July 14, 1953.

WALES GAS BOARD

SWANSEA UNDERTAKING

APPLICATIONS are invited for the position of GENERAL MANAGER of the Swansea Undertaking.

Candidates for the appointment, which will carry a salary of £2,000 per annum, must have had wide administrative experience and possess appropriate qualifications, not necessarily of a technical nature.

Applications, stating age, qualifications and experience, together with details of present and previous appointments and names of two referees, should be received by the undersigned not later than July 14, 1953.

C. B. MAWER,
Secretary to the Board.

Windsor Place,
Cardiff.

WALES GAS BOARD

KNIGHTON UNDERTAKING

APPLICATIONS are invited for the position of MANAGER of the above undertaking within the salary grade A.P.T. grade VB £445/£525 per annum inclusive of emoluments ; a house will be available.

Applicants should possess sound experience in gas manufacture and distribution and be capable of carrying out successfully the administration and other duties of the post.

The successful applicant will be required to pass a medical examination and join the Board's superannuation scheme.

Applications, giving age, qualifications, present position and experience, together with the names of two referees, should reach the undersigned not later than July 14, 1953.

C. B. MAWER,
Secretary to the Board.

Windsor Place,
Cardiff.

WALES GAS BOARD

MERTHYR TYDFIL AND DOWLAIS UNDERTAKING

APPLICATIONS are invited from suitably qualified and experienced persons for the appointment of TECHNICAL ASSISTANT for Distribution Department.

Applicants should be experienced in modern distribution practice including the preparation of specifications, drawings and estimates.

The salary will be within Grade A.P.T. V (Prov. 'A') of the National Salary Scales. The post is superannuable and the successful applicant will be required to pass a medical examination.

Applications, stating age, training, experience and qualifications, accompanied by the names of two referees, should reach the undersigned within fifteen days of the appearance of this advertisement.

D. E. WEST,
Engineer & General Manager.

Wales Gas Board,
Merthyr Tydfil & Dowlais Undertaking,
Gas Offices,
143, High Street, Merthyr Tydfil, Glam.

WALES GAS BOARD

PONTYPOOL UNDERTAKING

APPLICATIONS are invited for the position of GENERAL MANAGER AND ENGINEER of the Pontypool Undertaking.

Candidates for the appointment, which will carry a salary of £2,000 per annum, must have had wide administrative experience and possess appropriate technical qualifications.

Applications, stating age, qualifications and experience together with details of present and previous appointments and names of two referees, should be received by the undersigned not later than July 14, 1953.

C. B. MAWER,
Secretary to the Board.

Windsor Place,
Cardiff.

EASTERN GAS BOARD

NORWICH DIVISION

TECHNICAL ASSISTANT—DISTRIBUTION—NORWICH GROUP

APPLICATIONS are invited from suitably qualified persons for the above position. Applicants should have had experience with medium and low pressure distribution systems and will be required to assist the Group Distribution Superintendent in all aspects of distribution relating to mains and services and control of labour.

The commencing salary will be within Grade A.P.T. VI (£490-£570 per annum) with placing according to qualifications and experience. The successful applicant will be required to pass a medical examination and to join the Board's Superannuation Scheme.

Applications, giving age, qualifications and experience, together with the names of two referees, should reach the undersigned within fourteen days of the appearance of this advertisement.

J. V. KNIGHT,
Manager, Norwich Group.

Eastern Gas Board,
Gas Works,
Bishop Bridge,
Norwich, Norfolk.

SOUTHERN GAS BOARD

WESTERN DIVISION

APPLICATIONS are invited for the position of SENIOR IGENERAL ENGINEERING DRAUGHTSMAN at the Poole Works of the Bournemouth Undertaking.

Applicants should have knowledge of Gasworks Plant with special reference to structural steel and reinforced concrete work, including the taking out of quantities and the preparation of specifications.

The salary will be in accordance with A.P.T. VIII (Provincial 'A') of the salary scales of the National Joint Council for Gas Staffs, *i.e.* £585 to £665 per annum, according to qualifications and experience.

The successful applicant will be required to undergo a medical examination and also to join the Southern Gas Board Staff Pension Scheme.

Applications, giving full particulars of age, training, experience and qualifications to be submitted to the undersigned on or before July 25. 1953.

J. C. HOGG,
General Manager.

Bournemouth Gas Undertaking,
136, Old Christchurch Road,
Bournemouth.

PLANT FOR SALE

THE following BRAND NEW totally enclosed 440/3/50 SQUIRREL CAGE MOTORS being tropically rated and tropically insulated are suitable for service where ambient temperature and relative humidity are high. They are offered at a substantial discount even compared with motors designed for a temperate climate.

1 off 55 h.p. Metro Vick 950 r.p.m. (starter available)
1 off 17½ h.p. Stamford 1440 r.p.m.
1 off 10 h.p. Metro Vick 1440 r.p.m.
1 off 6 h.p. Metro Vick 730 r.p.m.
1 off 5 h.p. Crompton Parkinson 1430 r.p.m.

Also :

1 off screen protected 30 h.p. 970 r.p.m. Verity machine

Quotations on request to : W. H. Collingbourne & Co., Ltd., 1481, Stratford Road, Birmingham 28. *Phone*: Shirley 3303.

The
LIMIT OF EFFICIENCY CAN BE REACHED
by the use of
LUX
GAS PURIFYING MATERIAL

Sole Importers:
HARRISONS (London) LIMITED
66, Mark Lane, LONDON, E.C.3
Telegrams : Birchrock, London
Telephone : ROYal 3120

THERE'S A CALL FOR MORE BOOSTERS

IT WILL PAY TO SPECIFY HOLMES-CONNERSVILLE

W. C. HOLMES & CO. LTD.

HUDDERSFIELD • LONDON • BIRMINGHAM

Tel: Huddersfield 5280 London: Victoria 9971 Birmingham: Midland 6830

FOUNDED 1854 HOLMES HUDDERSFIELD

© 1930

we serve to burn

"Fishtail" type burner *with two-armed stamped pattern injector for heating liquid in tanks by submerged horizontal combustion tubes. For use with low pressure gas supplies.*
Size Range: *1", 1¼", 1½", 2" and 2½" outlets.*
Capacity Range: *45-280 cu. ft. of gas per hour.*

Note.—These four burner heads are for high pressure gas or low pressure gas and air blast.

Brass non-blow-off head types: *deal with 5 to 10 cu. ft. of gas per hour.*

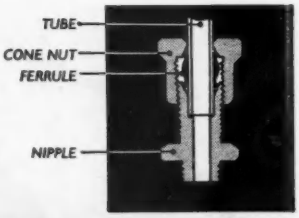
Stainless steel, "F" type head, burner: *deals with 8 cu. ft. of gas per hour.*

Perforated head type burner: *deals with 10 or 15 cu. ft. of gas per hour.*

Type 2 Mixture Controller, *for controlling quality of air/gas mixture irrespective of varying pressures and resistances. Temperature control is varied by manipulation of the air cock only.*
Capacity Range: *from 130 to 1380 cu. ft. of gas per hour according to air pressure (¼ lb. to 1 lb.) and size. For low pressure gas systems.*
Air Inlets: *1", 1¼", 1½" and 2" diameters gas thread.*

DID YOU KNOW?

KEITH BLACKMAN have been making compression joints for many years and the present design embodies features developed as a result of this long experience. Notice that the shape of the ferrule is such that the joint is made without unduly stressing the tube.



INDUSTRIAL GAS EQUIPMENT

Keith Blackman LIMITED
MILL MEAD ROAD, TOTTENHAM, LONDON, N.17
'Phone: Tottenham 4522 (twelve lines). 'Grams: "Keithblac, Nortotte, London."
BRANCH OFFICES: AT MANCHESTER, BIRMINGHAM, LEEDS, GLASGOW, NEWCASTLE-ON-TYNE, PENARTH near CARDIFF AND BELFAST

510

Jets or nozzles . . .
call them what you will

. . . . . we are specialists in their manufacture and can make them to any specification from ·008" to 1" orifice in any metal.

In addition to the Gas Industry some of the other trades for which we manufacture are the Aircraft Industry, the Motor Industry, Paint Spraying, Crop Spraying, Sand-Blasting, Bottle Washing Machinery, etc.

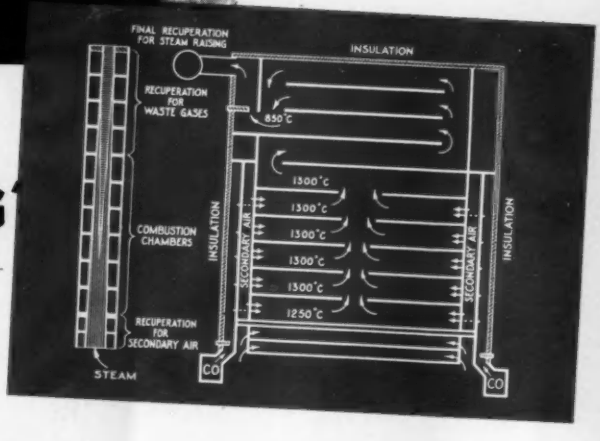
We are geared to meet any demand and welcome your enquiries.

SEND FOR FULL DETAILS TO:

POLLOCK & PEEL *Limited* ENGINEERS

SOUTH END, CROYDON, SURREY. Tel: CROydon 3158/9

Registered as a Newspaper. Printed by STRAKER BROTHERS LTD., E.C.2, for WALTER KING, LIMITED, 11, BOLT COURT, FLEET ST., LONDON, E.C.4. Wednesday, July 1, 1953



'BALANCED HEATING' saves fuel

"Balanced Heating", a feature of the Glover-West continuous vertical system of carbonization, reduces fuel consumption to a level hitherto unobtainable. In the "Balanced Heated" setting, producer gas enters the combustion chambers from *both* sides and retorts are evenly heated by *primary* combustion. Combustion proceeds towards the centre of the setting, heat transmitted to the outer walls being recovered in the producer gas and air uptakes and returned to the system. Control of temperature in individual combustion chambers gives greater flexibility—an important factor today when many different coals are handled by one plant.

★*Illustration shows a "Balanced Heated" setting under construction*

West's Gas IMPROVEMENT CO. LTD.

ALBION IRONWORKS · MILES PLATTING · MANCHESTER 10

Telephone: COLlyhurst 2961. Telegrams: Stoker, Manchester.

London Office: Columbia House, Aldwych, W.C.2. Phone: HOLborn 4108-9 Grams: Wesgasco, Estrand

STEELWORK

Whether you want

A SINGLE JOIST

OR

A COMPLETE BUILDING

Try

D&R

STEELWORK SERVICE

DUNLOP & RANKEN

CONSTRUCTIONAL ENGINEERS
IRON & STEEL STOCKHOLDERS

LEEDS